"If war were declared tomorrow, what would we do for aircraft?"

AVIATION

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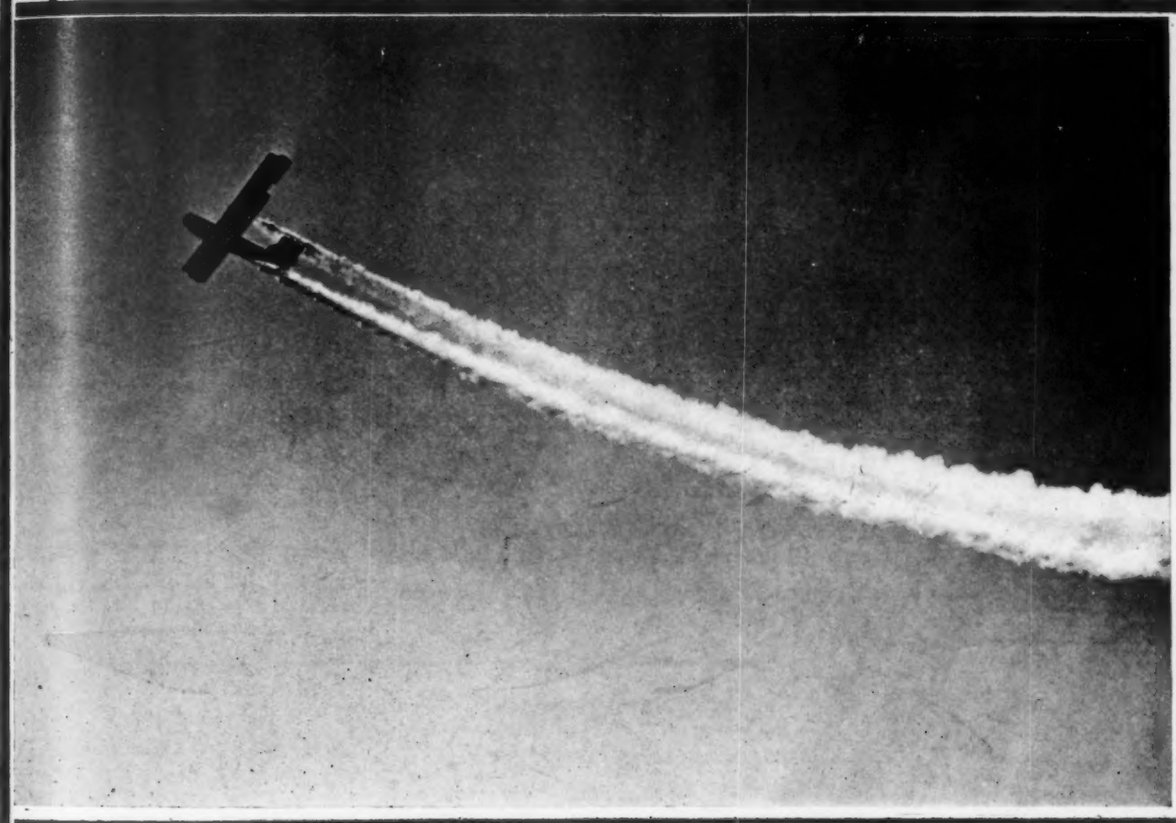

U. S. Naval Flying Boat Lays Smoke Screen in Experiments at Anacostia, D. C.

VOLUME XIV NUMBER 24

SPECIAL FEATURES

BATTLESHIP VERSUS AIRPLANE

DEWOITINE LIGHT PLANE ARRIVES IN AMERICA

LOW POWERED AIRPLANES AND GLIDING EXPERIMENTS

NEW TRANSCONTINENTAL FLIGHT ATTEMPTS

THE GARDNER, MOFFAT CO., INC.
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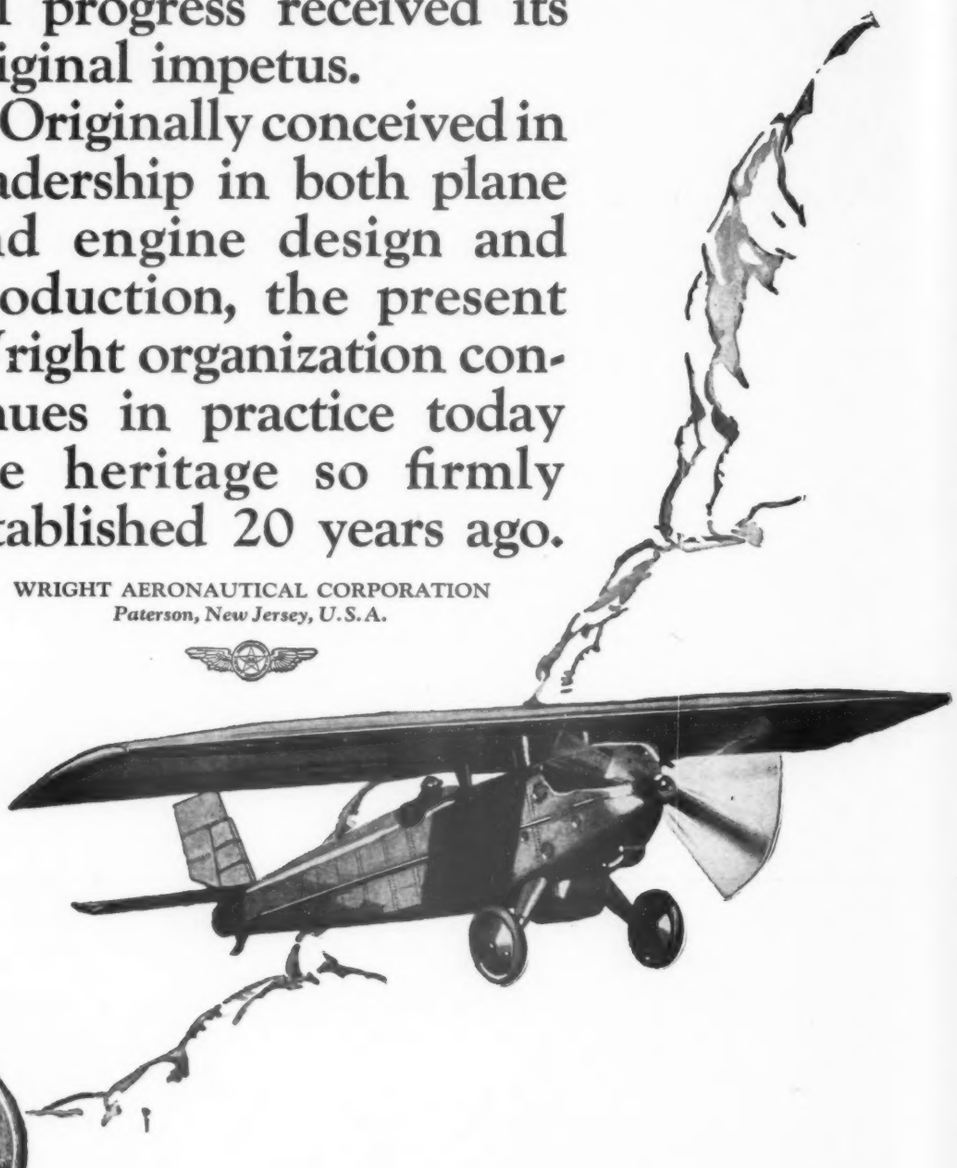

"The Identification of Incomparable Service"

WRIGHT

JUNE 11, 1923

AVIATION

VOL. XIV. NO. 24

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Vol. XIV | JUNE 11, 1923 | No. 24

THE NEXT WAR

H. G. WELLS whose literary anticipations of future wars have gained for him a reputation that puts him in the class of wise prophets again predicts dire happenings in the next conflict. His knowledge of air tactics must be limited when he says it is an absurd contention that air raids cannot be avoided by being strong in the air. Equally fallacious is his statement that "however strong and however powerful in the air a nation may be, it cannot prevent airplanes of a rival country penetrating its defenses."

"I speak not as a novelist but as a practical man. In the war of the future, one bomb will wipe out the inhabitants of a small town and a rain of bombs will destroy every living thing in a large city.

"When that stage is reached, the profession of arms will be reduced to an absurdity. No one, neither combatants nor non-combatants, will survive and, for all we can tell, civilization may end in dust and smoke. To arm, therefore, in such fashion is not to defend this country from attack by air, for the country is virtually indefensible. All we can do is retaliate and wipe out our enemies and so do to them what they can do to us."

Turning to the Air League of the British Empire, which is championing an extension of British air power, Mr. Wells says:

"I believe that in the main they are a lot of commercial people purely out for plunder and, though the Air League cannot be called a parallel to the Navy League, it savors very much of a ring of interested persons gathered together to induce the Government to embark on a vast, expensive air policy.

"I do believe most wholeheartedly in research in all matters connected with aviation, for aviation is the coming transport of the future. Tremendous advance in air travel is as inevitable as the coming of the new year after the decline of the old.

"I object to interested manufacturers attempting to stampede the Government to place a large order for airplanes and airplane parts in the hands of private firms. They are in most cases inefficient and I can see no hope of any real development in civil aviation until aircraft manufacture is placed under national control."

Such comment may be pertinent as to conditions in England, although we doubt it, but certainly it does not hold in the United States. The National Aeronautic Association is composed of persons in all walks of life, and if the past policy of giving information to prospective investors regarding aeronautic promotions is discontinued, the N.A.A. will not be open to similar criticism.

In this country, it is interesting to read of manufacturers stampeding the Government into placing large orders. Would that someone or every one could work up interest enough in aeronautical development to even equip our present meagre services with aircraft that would be of some use in time of war. Here in this country, we are not only not in a stampede, but actually going backward owing to the great air fleets being built in Europe. We have the engineers, we have the types, we hold the records, but that is the end. We have not the ships nor are many in process of manufacture. As the Secretary of War recently said. "If war were declared tomorrow, what would we do for aircraft?"

AERONAUTICAL LEADERSHIP

WHAT the aircraft movement in this country needs at the present time is leadership. In Italy we hear of Premier Mussolini taking personal control of aeronautical activities. In Great Britain the air force is represented in Parliament by a Cabinet minister. In France an Under-Secretary of Aeronautics is responsible to Parliament for all military, naval and civil air activities, and the three air budgets are drafted with his concurrent opinion. In this country, Admiral Moffett, General Patrick and General Mitchell are limited by regulations and the customs of the Services.

Admirals Sims and Fullam are retired officers who can speak their minds, but unfortunately not where it is most necessary. A leader is needed either in Congress in the person of the chairman of a Committee on Aeronautics, or of an under-secretary of the War or Navy Departments, or better still, of a Department of Defense.

The scramble for appropriations is so intense that the Air Service must be content with taking about 5 per cent of the money authorized for the Army and the Navy, and make the most of it. If the War, the Navy and the Post Office Departments could make an agreement to join in the matter of aeronautical appropriations and appear before a single committee concerned with the aerial defense of the country, it is probable that some tangible results could be accomplished toward giving this country an adequate air force. Such co-operation might also prevent much of the duplication of experimental work, and eliminate the necessity of the present competition. Then, if someone in the government would take the leadership of the aircraft movement and champion the air forces as our first line of defense, there would be a development that would not only delight the country but also save large sums to the taxpayer.

"If war were declared tomorrow what would we do for aircraft?"

The Question of Battleships versus Airplane

How it is Viewed by the General Board of the Navy And by Admirals Fullam and Moffett

The General Board of the Navy has just completed what it terms an exhaustive investigation of all the elements of present day sea power as affected by the development of the airplane, the submarine, and other modern weapons of naval warfare.

The day this announcement appeared in the New York Times, the New York World published an article entitled "How Many of our Admirals Have Minds?" Large portions of both this article and the report of the General Board of the Navy are reprinted below together with a radio address of Rear Admiral W. A. Moffett, Chief of the Bureau of Aeronautics, Navy Department, so that the record may be clear to our readers.

The General Board is mistaken in assuming that advocates of aircraft want to scrap all battleships as a matter of principle. That is not the point. The point the supporters of air power make is that if we are to have battleships then they should be made invulnerable to aircraft attack, if they can be made so. According to Admiral Sims, this is a debatable question and can only be determined by tests. All that the advocates of air power ask is that aeronautical appropriations be not limited to 5 per cent of the total Navy budget. Give our airplanes an opportunity to demonstrate what they can do before it is done by an enemy.—EDITOR.

Official cognizance has been taken by the Navy Department of the controversy that is fast heading up over the airplane and its relative importance, present and future, in the continuance and development of America's sea power, says the New York *Times*.

What the General Board Thinks

In and out of the service a school of thought is developing that the airplane is the all-essential weapon and has rendered the battleship obsolete. While there are few such "extremists" in the active service, there are exponents on the outside whose views are widely heralded, and for obvious reasons their doctrine appeals to the popular mind. Actual accomplishments fire the public imagination and the economy arguments appeal strongly to the taxpayers.

For weeks past the board has been studying the intricate problems involved in all their different phases. Officers and experts representing every branch of the service have been called into conference and an effort made to get the varying shades of opinion in the service from the few "bitter-enders" who cling unchanged to the old school of thought, to the few extremists who hold the airplane as the all-powerful weapon.

While no official report has been made public, individual members and responsible heads of the navy hold that in spite of the great strides made by aviation nothing has happened to warrant the conclusion that it is rendering the surface craft obsolete or that the battleship has or will be superseded as the "backbone" of sea power.

"Misleading propaganda" of certain ultra-enthusiastic exponents of aviation that tends to create a popular belief that it has made the battleship an obsolete weapon is also scored by all heads of the department.

The technical side of the controversy was probed deeply during the board's study and the situation as it exists today is concretely sized up in a "consensus" statement which expresses the opinion of naval aviation experts as well as ranking line officers.

It is a favorite statement of those who see in military aeronautics a means for cheap effective warfare that a $15,000 airplane can sink a battleship. This statement usually carries with it the implications that battleships and other ships of the navy should be replaced by aircraft, and that this would be an economical procedure.

The original cost of an airplane is small, but, it is pointed out, aircraft wears out and becomes obsolete in two years' time. Add to this the unavoidable expense of maintenance in the very high percentage of loss, through crashes and other operating causes.

Eighteen of the most modern battleships and battle cruisers, 200 modern destroyers, thirty modern cruisers, fifty modern submarines could be built for two-thirds the cost of our aviation effort during 1917, 1918, 1919 and 1920. These vessels would be effective for twenty years.

Aside from the economy argument, let us look at the tactical problem presented to a bombing plane about to attack a battleship at sea. First of all, the attacking plane will be under fire long before he can drop his bomb. He will drop his bomb from a position about a mile above sea level, at a time when he is well within range of a dozen or more machine guns firing 250 rounds per minute. Added to this disturbing shower of bullets will be the barrage of bursting shrapnel of large calibre anti-aircraft guns. The aviator must judge accurately the course and speed of the battleship, judge accurately the direction and force of the wind, then shape his own course through the air so that the combined effect of the speed and the course of the plane and the direction and force of the wind will cause the plane to travel along a straight

SIR SAMUEL HOARE ON AIR POWER

The General Board of the Navy is of the opinion that aircraft can hold nothing, and that they have merely added to the complications and possibilities of warfare without displacing anything.

Sir Samuel Hoare, British Air Minister, in a recent speech before the House of Commons, revealed that aircraft can effectually occupy a territory. He said in this connection:

"For the first time in history, not only in this country, but of the world, we have started an independent air command. In Iraq today there is no longer a general officer commanding the troops, but for the first time in history there is an air officer commanding.

"It has been possible to supply an armored car column with stores, spares, petrol and rations for seventeen days entirely from the air. It has been possible to evacuate 67 persons, military and civil, by air to a point 70 miles distant in the space of little more than two hours. Two companies of an Indian regiment, amounting to over 300 men, with their Lewis guns and 3000 rounds of ammunition were taken by airplane to a disturbed district, 65 miles distant, within 24 hours at a time when the roads were impassable and when it would have been otherwise impossible to move troops at all."

line that will, when prolonged, pass through the battleship at the instant the bomb completes its fall.

Having done all this, the aviator, without swerving his plane and while maintaining it horizontal, must release his bomb at the right time within a fraction of a second.

If he does all this faultlessly, unruffled by bursting shrapnel and the whistling streak of tracer bullets, and if there are no cross currents of wind lower down, and if the ship does not change her course, it is probable that one bomb in twenty-five will hit. Probably five hits by large bombs would disorganize but not sink a modern battleship. So much for the tactical problem.

The Strategic Problem

The strategic problem involved in aircraft versus surface ships is fundamental, and, under present or foreseen conditions, admits of but one solution. The great systems of world commerce operate on the surface of the sea. Armies move on the surface of the earth and the surface of the sea. Every industrial, political, military, naval and air activity derives its support from the land. Ability to hold and to control the land and to control what happens on the surface of the sea are essentials of success in war.

Another and very important point that has the support of all history is that success in war belongs to the side that takes the offensive. Consider now the fact that 3,000 to 6,000 miles of sea lie between the United States and a possible enemy. Let us say that war is declared with some power across the sea and that we proposed to fight the war out in the air, unaided by ships. Every outlying possession of the United States—Alaska, the Philippines, Guam, the Canal Zone, Porto Rico—will fall into enemy hands because his ships may carry all the force he wants to those points and because the forces we maintain there can never be strong enough to resist indefinitely without reinforcement. The enemy fighting ships will see to it that our merchant ships and our transports shall not cross the sea with reinforcements. Aircraft cannot prevent them from doing this. What can we do to the enemy with aircraft and without ships? Nothing, unless we are within flight distance of him.

It is conceivable that we may defend our home coasts successfully, but even here aircraft are useful in defense only during the daylight. Weapons that are primary, that control and decide, must be on the job twenty-four hours a day and must be capable of searching out and attacking the enemy where he lives. They must be capable too of holding what they gain. Aircraft may attack within the radius of their flight, but they can hold nothing, they cannot advance their shore positions or even hold them without the aid of troops and fortifications and all the paraphernalia of war existed prior to their advent. They have added to hazards and complications and possibilities of war, but have displaced nothing. They are auxiliary weapons.

Armies that move upon the ground and ships that move upon the sea are still the controlling factors in war. Aircraft support other military effort and do it with spectacular efficiency, but those who think that because of aircraft we can do without navies and armies lack that fundamental of military genius—strategical and tactical vision.

The field of aircraft over the sea is already wide and will expand. They will scout, attack ships and stations with bombs and torpedoes, and will increase greatly the gunnery efficiency of a fleet in the earlier stages of battle. But, when America is considering the offensive warfare in defense of her rights and her policies, there is no other way to attack the enemy than through the medium of ships first.

Without ships we fight our enemies on our own soil. With ships we may carry the war into enemy territory. Aircraft cannot perform this function for the nation till ships have carried their supports across the sea and guarded them there. Fleets—battleships and their attendant vessels—are the only means for carrying American national power into distant areas in war.

Admiral Fullam's Article

Rear Admiral Fullam's article contributed to the New York *World* was published as follows:

Admiral Fullam with the following article suggests these headlines be used on his story:

"An Impotent Navy."

"Progressiveness and Vision Are Lacking."

"Lord Fisher's Prophecies Have Come True."

"How Many of Our Admirals Have Minds?"

ADMIRAL MOFFETT ON AIR POWER

"Out of three hundred and forty million dollars allowed for maintenance of the Navy, Naval Aviation is allowed less than fifteen millions. On this meagre appropriation we have managed to struggle along and barely keep aviation afloat.

"Aviation is dominating and controlling world conditions today. The overwhelming air force of France is enabling her to dictate terms. She is able to occupy German territory and hold it in defiance of the protests or action of any other power or powers.

"Until the advent of Aviation, sea power, as shown by our great naval writer, Captain Mahan, had settled practically all wars in the history of the world. Air power has changed all this. In the present and in the future, wars will be settled by control of the air as well as by control of the sea."

REAR ADMIRAL WILLIAM A. MOFFETT

ADMIRAL SIMS ON AIR POWER

"There can be no doubt that the vulnerability of battleships to bomb attack bears no possible relation to their armor plate, as the armor plate does not perform any function of protection in this respect. The armor plate only goes a short distance below the water line. Therefore, a bomb dropped in the water not far from the ship and exploding at a depth of 50 to 60 feet, would act against the structural plate of the ship, below the armor and on the bottom. Thus structural plate could not stand very much external pressure, being much less in structural strength than the hull of a submarine; and we know, from experiments, that a submarine can be sunk by an ordinary depth charge of 300 pounds of T.N.T. exploding at a distance of not less than 300 feet. Experiments show that the pressure brought to bear from that distance by even such a small depth charge is over 1200 pounds to the square inch.

"It would therefore seem that a bomb weighing 4,000 pounds, with 2,500 pounds of T.N.T. *would sink any battleship now built or likely to be built, if exploded within a few hundred feet of the hull.* I should think that the effect upon the communications and on the condenser system would be very serious. I should also think that a bomb of this size that struck a ship would undoubtedly penetrate at least as far as the protective deck. I cannot imagine that amount of T.N.T. exploding in the interior of a ship without entirely wrecking the comunication and probably the condenser systems."

REAR ADMIRAL WM. S. SIMS

"If war were declared tomorrow what would we do for aircraft?"

"The Need of Modern Weapons."

"Conservatism Must Give Way."

By ADMIRAL W. F. FULLAM

"How many of our Admirals have minds?"

This question was asked by Admiral Sir John Fisher in 1904—ten years before the World War began. It was inspired by his farsighted consideration of the ultimate effect of submarines and wireless telegraphy—which were then in their infancy—upon naval warfare. His comments are full of interest in 1923—nineteen years after he made them.

We find in them an awful contrast to the behind-the-times-looking-backward mental processes that have so disastrously

Rear Admiral W. F. Fullam, U. S. Navy (retired)

prevailed among officers in the United States Navy in their work of shaping or vainly attempting to shape a naval policy that will give us a fleet with the elements and weapons that must inevitably dominate the next war on the sea.

On Ships and Torpedoes

Referring to the type of ship that will give the best results, Admiral Fisher says:

"But what is the type of ship? Not one that goes to the bottom in two minutes from the effect of one torpedo and drowns nearly 1,000 men and takes three years to replace and costs over a million sterling. (That was in 1904; they cost six million sterling in 1923.)

"How many types do we want? This is quite easy to answer if we make up our minds how we are going to fight. Who has made up his mind? How many of our Admirals have minds?"

It is only fair to note at this point that despite Lord Fisher's prophetic vision of the future he would not let go the old weapon until the new weapon was developed and until he got firm hold on it. And so he developed the dreadnought, the big gun and the battle cruiser between 1904 and 1914 in a brave attempt to combat the "angel of light," and during the years from 1904 to 1914 the power of the battle fleet increased to the maximum, the torpedo increased in effective range from 400 yards to five or ten miles; the submarine was so developed that it nearly won the war despite the navies of the world, the mine became an ever present menace to fleets and to commerce, and now today air power has come to dominate warfare on land and sea.

There is a lesson in this of vital importance to the United States. Conservatism, strong as it is in the British Navy, is even stronger and more disastrous in ours. The prophecies of Lord Fisher and the soundness of his doctrines have been recognized by a comparative few of our Admirals. The prevailing sentiment in Washington and the tendency to stifle progressiveness have prevented the adoption of a policy that would most surely give us a modern, up-to-date fighting navy.

Our submarines have not been perfected. Their condition is deplorable. We have no modern ones. Three years ago the Chief of Operations stopped the building of six new ones that were sadly needed. Our air forces are pathetically weak. Our fleet is unprotected above and below. It is impotent in modern war. It could not leave the home coast to fight an enemy supplied with modern weapons. We still hear officers of the army and navy talking about a fleet blockading or attacking a hostile coast!

"They are Living in the Past"

They continue to dream of sending armies overseas. They are living in the past. The Panama maneuvers were ten years behind the times. An officer who advocates a three-plane navy—the only kind of a navy that can go anywhere or do anything in 1923—is charged with the desire to substitute airplanes for battleships and cruisers!

It is not realized that we must have all three at present, and that time may change all types of fighting ships. How many naval officers "realize the vast impending revolution in naval warfare and naval strategy" that confronts us today?

"How many of our Admirals have minds?"

* * *

Radio Address by Admiral Moffett

In spite of the fact that nations throughout the world are turning to air power for national defense, and bending every effort to develop aviation to serve them commercially, we in America unfortunately seem to suffer from a general state of apathy toward this great development. In fact our neglect of aviation in this country will soon amount to almost a national peril. We are proving more backward in developing commercial aviation than Russia or Siam. We still seem to consider aviation as a field of sport, and aeronautical achievements are generally considered as spectacles to create a momentary wonder and be dismissed from the mind.

Aviation is a serious business. It can, and should be made an immensely profitable one, and a means of service throughout the country that would redound to the profit and well-being of every citizen from coast to coast, and border to border.

It is time that we stopped looking upon the airplane as a plaything. The day when it could be so considered has passed, many years since, and if we will but open our eyes and look around us, we will see that others in the world have not been blinded to the importance of keeping abreast of aviation.

The Race for Aerial Supremacy

A very few years ago the world was troubled over the race among the world powers to develop their armies and navies, and this country took the initiative in 1921, looking to the limiting of naval building. But there is a race going on at present which is a counterpart of that which has recently been settled. It is a race for supremacy in the air. And the problem that it presents from an international standpoint will not admit of the same solution as that which was applied to

naval armaments. Naval ships as such are clearly defined. They are distinct and apart from merchant vessels in their characteristics. But aircraft for war and aircraft for commerce bear similar characteristics which can not be easily separated from either. The commercial airplane designed to transport passengers is a weight-carrying plane which can be just as easily used to carry bombs or guns. And the swift fighting planes are just as useful in peacetime pursuits for despatch bearing and quick business trips.

It would be an easy and comfortable solution, though scarcely one commending itself to the American spirit of progress, to say, "as we limited naval development, let us limit air power." Even if the nations of the world could be brought into agreement on this proposition (and that is an impossibility) we would be denying to future generations the benefits that aviation bring to commerce and industry.

I will give you a brief survey of what the nations of the world are doing to develop their air power. Soviet Russia has begun a great commercial and military aircraft program. This country, prostrated by internal strife and hopeless economic conditions finds it possible and highly important to enter upon an air policy that will make her a formidable contender in the race for supremacy of the air.

Looking skyward at a recent aerial demonstration in Russia, Lenin is quoted as saying "All nations start equal in the air." And Russia is pushing a government program for 5,000 planes and spare parts, special aviation schools have been established in eight cities and commercial trunk lines are planned to reach in a net work over vast territory.

France stands today in the lead of all nations as regards air power and not content with mere leadership is vigorously pushing ahead a program which causes marked uneasiness on the part of England. Urged on by the trend of the times and by the policy of her near neighbors, Great Britain proposes to spend one hundred million dollars to duplicate the French air effort. France is developing her colonial air defenses and is extending her commercial air lines and air mail service to bring the colonies in closer touch with the home government. In 1922 more than fourteen thousand passengers were carried by air in France and in addition, over a million pounds of freight and ninety thousand pounds of mail were carried. They are reaping the benefit of this development and a proposal to curb it would be met with scorn. On the other hand, the air power of the country, from a military standpoint, has been strengthened by every commercial plane that has been put in service. All of this is viewed in England with alarm because England has not kept up the pace. In America these things are practically unknown, or else the reaction to them is apathetic because their significance is not appreciated.

England is dismayed at the aviation development on the continent which has been progressing under her very nose. The British demobilized their air forces to a great extent after the war as we did, while France kept hers and made more ambitious plans for extending it.

How Japan Views Air Power

Last year Japan appropriated almost as much for naval aviation as did the United States in spite of the fact that the terms of the Naval Limitation Treaty place this country and Japan on a 5-3 basis. Japan was not violating the letter or spirit of the treaty in doing this, for aviation development is not limited in the terms. The fact is mentioned only to show the relative importance which aviation has in the Japanese plans for national defense as against the importance with which it is viewed by our legislators.

German aviation, though handicapped by the terms of the treaty, has not languished. German engineers, manufacturers and pilots have simply transferred their operations to foreign territory and may be found working with zeal and purpose in Russia, Switzerland, Holland, Italy and the Scandinavian countries. Last year the German government appropriated twenty-two billion marks in subsidies for commercial air lines and the many continental air lines in surrounding countries are operated with German brains and backing.

And how does all this affect America? Granted that we are willing to neglect our aircraft industry, stifle our aerial commerce and remain in the class of China and Korea, what bearing has all of this on our vital considerations of national well-being and safety?

There is an inclination on the part of many individuals to consider aviation from a viewpoint that is twenty years behind the times. They do not realize that aviation has shrunk the world in size to one tenth of what it was formerly, that countries and nations which in the past have been at the ends of the earth are now at our very doors. Less than a month ago the scouting squadrons of naval airplanes returned from Panama where they had been cooperating with the combined Fleets in maneuvers. They had flown 7000 miles as a unit, and had individually covered more than 100,000 miles

Rear Admiral W. A. Moffett, Chief of the Bureau of Aeronautics, Navy Department

of scouting while with the fleet. In the light of this, can we any longer count on smug isolation to save us from the necessity of developing air power on a par with the other great powers of the world?

Vital Importance of Commercial Aviation

Other nations of consequence subsidize aeronautics because of its vital importance to national defense. They appear to see what we cannot visualize. We need Commercial Aviation as a means of defense. The thousands of trained pilots that would be created as a reserve by Commercial Aviation would be the salvation of the country in an emergency. And we furthermore need funds to create a Naval Aviation Reserve so as to train the thousands of young men who were demobilized from the aviation branches during the war. When these men are no longer young, we need to train others to take their places as a body of "minute men", ready if the need should come.

We need an expansion of our Naval Aviation program to

adequately meet the needs of the Fleet. And we are hampered by a lack of funds and lack of men to meet the provisions of the Arms Treaty which is recognized as a minimum basis of our defense requirements. Every expansion of Naval Aviation to keep abreast of the development which is growing with leaps and bounds must, under the present conditions, be accomplished at the expense and to the detriment of some other arm of the naval service. The fallacy of this policy is revealed by stating the extreme case—if we expand Naval Aviation at the sacrifice of the Fleet, we can carry it to the point where Naval Aviation will have no fleet to serve.

The Navy has been cut to 86,000 men and Naval Aviation has been forced to take its share of this cut. Out of the three hundred and forty million dollars allowed for maintenance of the Navy, Naval Aviation is allowed less than fifteen millions. On this meagre appropriation we have managed to struggle along and barely keep aviation afloat.

Had we followed the policy of France, we too would be leaders in the air today, but whatever our course may have been, we cannot dodge the issue. We will have to traverse the full distance and though we have lagged and idled on the road, it stretches before us and must be traversed.

It has been necessary in the general scaling downward of expenditures to abandon air stations that have been of great value to us in the past. Notable among these is the Rockaway Air Station, which, during the war, was established as a bulwark of defense for New York City. Our aviation program should call for the opening of these stations, and Rockaway is particularly valuable as a fleet air base and as a defense for the metropolis.

Aviation in the Navy, inadequate though it may be, is on a firm footing and we are steadily making progress and holding on, sure in the belief that our time will come to expand to adequate proportions.

We are Behind the Times

Civil and commercial aviation in this country, is, however, little short of a national scandal. We have by negation sanctioned the wanton loss of human life by neglecting to pass appropriate laws for curbing the irresponsible and dangerous gypsy fliers who operate over the country without let or hindrance. We have the humiliating experience of not being able to land our planes in Canada because Canada has air laws which require the licensing of pilots and the inspection of planes, and we who have no such laws do not issue credentials to pilots of tried and proven ability. Canada is right and we are wrong. Wrong in that we are hopelessly behind the times. The utter disregard of aircraft operation by civilians on the part of the government is productive of two great evils; first, it is costly in human life, and secondly, it denies all possibility of commercial expansion of aviation projects. Business men and capital will not support aviation because it is not subject to regulation and control by responsible agencies. And the cycle is complete when we refer again to the fact that commercial aviation must furnish the reserve for aviation in the Army and Navy.

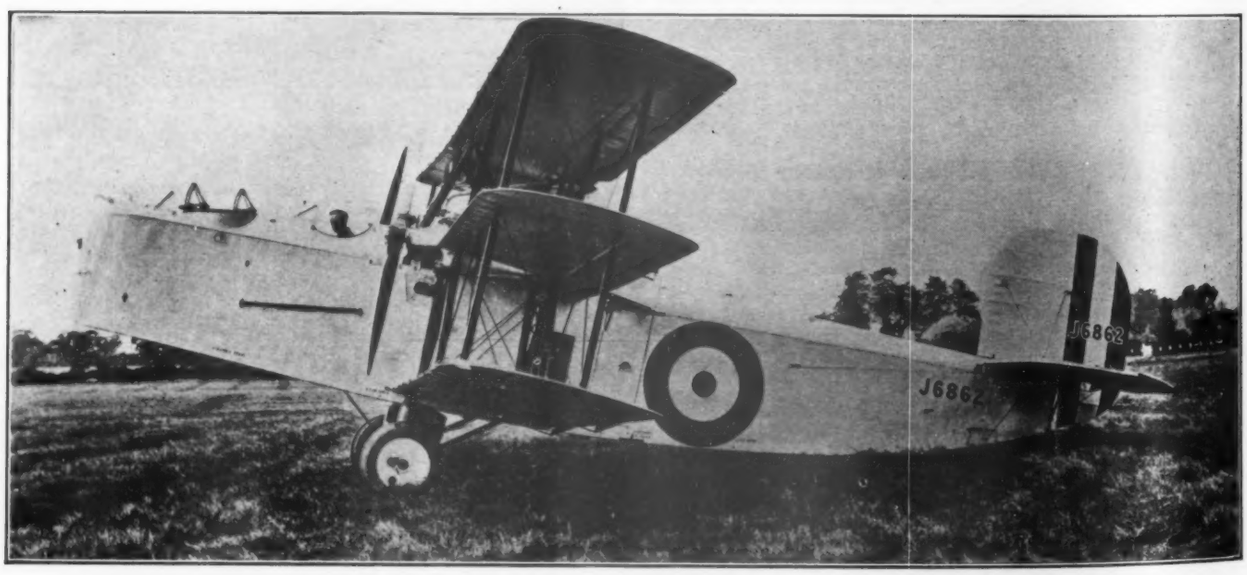
The Navy has striven to keep up with every line of development in aeronautics which will serve the best interests of the country from every point of view. Much of the work that has been done in Naval Aviation has been to the lasting benefit of commercial and industrial development.

We are now building in Lakehurst the first rigid airship to be constructed in this country. There has been a great deal of talk about whether or not rigid airships are any good for commercial or wartime purposes. We believe that they are, and we are building this ship to determine once for all whether or not the airship can do the many things that are claimed for it. The ZR1 will make extensive flights when completed. Announcements have already been made of projects to fly her to the North Pole and around the world in time. But these flights will not be undertaken in any spirit of sportsmanship. They will be performed to ascertain to a definite degree the value of the airship in war and in peace, in commerce and in defense.

Aviation is dominating and controlling world conditions today. The overwhelming air force of France is enabling her to dictate terms. She is able to occupy German territory and hold it in defiance of the protests or action of any other power or powers.

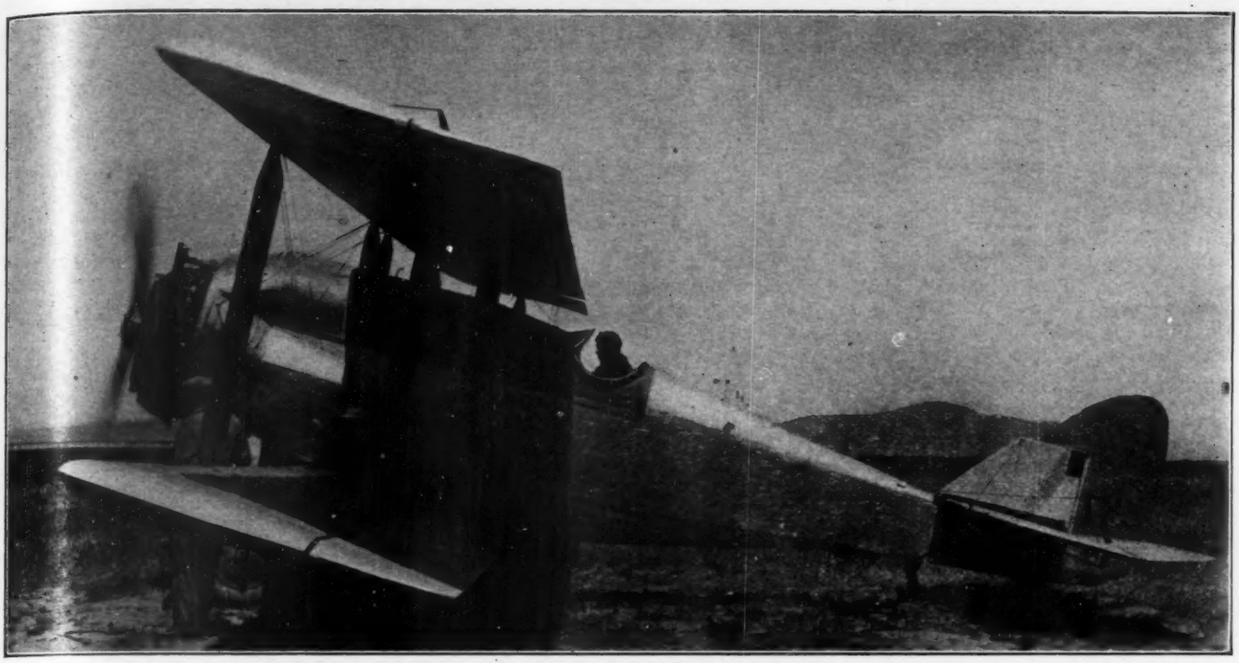
Until the advent of Aviation, sea power, as shown by our great Naval writer, Captain Mahan, had settled practically all wars in the history of the world. Air power has changed all this. In the present and in the future, wars will be settled by control of the air as well as by control of the seas.

An Interesting British Airplane



The Parnall "Possum" triplane which is driven by twin propellers from a single Napier Lion 450 hp. engine through gear shafts. The ship was built to the orders of the British Air Ministry for experimental purposes

"If war were declared tomorrow what would we do for aircraft?"



(c) International

Special plane fitted with 270 hp. Salmson engine and built by Claire Vance, U. S. Air Mail Pilot, on which he proposes to make a transcontinental non-stop flight from Crissy Field, San Francisco, to New York City.

To Fly Across Continent Non-Stop

A non-stop coast-to-coast flight in 24 hr. in a specially built airplane will shortly be attempted by Claire K. Vance, a Logansport, Ind., air mail pilot.

Vance's machine, which he built for himself weighs 4,200 lb. when fully loaded, has a gas capacity of 350 gal., a maximum speed of 122 m.p.h. and is capable of climbing 13,000 ft. Vance plans to leave San Francisco at 10 o'clock at night and, if successful, will land in New York about 6 o'clock the next evening. He will follow the air mail route through Omaha, Chicago and Cleveland.

Aero Chamber of Commerce Membership

Practically every concern and individual belonging to the Chamber during 1922 has continued its membership. There are now well over 200 members in the three classes.

Among those who recently acquired membership, are the following:

Class B

Aircraft Development Corp., General Motors Bldg., Detroit, Mich.; American Gas Accumulator Co., Elizabeth, N. J.; Eberhart Steel Products Co., 812 E. Ferry St., Buffalo, N. Y.; Great Lakes Aerial Photographic Co., 11511 Mayfield Rd., Cleveland, Ohio; Haskelite Mfg. Corporation, 819 Chamber of Commerce Bldg., Chicago, Ill.; Luftschiffbau-Zeppelin, Harry Vissering, American Rep., 14 E. Jackson Blvd., Chicago, Ill.; Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.; U. S. Touring Information Bureau Inc., Waterloo, Iowa; Wyman Gordon Co., Worcester, Mass.

Class C

Richard H. Depew, 136 W. 52nd St., New York City; Orton Hoover, Curtiss Aeroplane Export Corp., c/o U. S. A. Consulate, Rio de Janeiro, Brazil; C. S. Jones, Curtiss Aeroplane & Motor Corp., Garden City, N. Y.; Lawrence Leon, Curtiss Aeroplane Export Corp., 818 Via Monte, Buenos Aires, Argentina; Fred M. Ruddell, Kokomo, Indiana; S. Albert Reed, 113 E. 55th St., New York City; H. Von Thaden, Aircraft Development Corp., General Motors Bldg., Detroit, Mich.

Nationality Mark of American Aircraft

AVIATION reported some time ago on the strength of a Norvegian government decree published in "Nachrichten fur Luftfahrer" (the German air department bulletin) that Norway had adopted the letter "N" as its nationality mark. As this letter had previously been allotted to the United States as its aircraft nationality mark, it was editorially suggested that when this country becomes a party to the International Air Convention, the American representatives should ask to have the letter W allotted as our aircraft nationality mark. It was pointed out that as the letter "W" was one of the international radio call letters allotted the United States—as is "N"—such a choice would be eminently practical as well as an act of homage to the Wright brothers.

The National Aeronautic Association of U.S.A. now announces on the authority of the Controller General of Civil Aviation in Canada that at the third session of the International Commission for Air Navigation, the letter "E" was granted to Norway as that country's nationality mark, with the letter "N" as the first letter of the registration mark. The letter "N" therefore remains the nationality mark allotted to United States civil aircraft.

State Air Legislation

Failure of Congress to pass the Winslow Bill, providing for a Bureau of Civil Aeronautics in the Department of Commerce, led to consideration by many State Legislatures of an Aviation Code which was inadequate to meet the situation.

The Aeronautical Chamber of Commerce, through its various State Committeemen and in co-operation with the National Aeronautic Association, has persuaded several State Legislatures to withhold final action on such legislation.

One particular instance is the case of the Pennsylvania State Legislature where, through the co-operation of the Aeronautic Association and the Chamber's State Committeeman, W. Wallace Kellett, who is President of the Pennsylvania Aero Club, the Legislature was persuaded to withhold passage of an Aviation Code until after the conference arranged by the National Aeronautic Association with the Commissioners on Uniform State Laws, which is called for next August.

"If war were declared tomorrow what would we do for aircraft?"

Low Powered Airplanes and Gliding Experiments

Symposium of Conflicting Opinions Regarding their Value As Voiced by the French Press

By Ladislas d'Orcy

The recent two-way crossing of the English Channel by Georges Barbot on a Dewoitine light plane, and his subsequent flight from the French coast to Paris, a distance of 160 miles, has brought forth in the French aeronautical press a great number of conflicting expressions of opinion. It may be remarked for the benefit of those who do not read these publications that the French aeronautical world, ever since the Combegrasse gliding meet, has been divided into two almost hostile camps on the question of gliding experiments and light planes.

Those who sponsored that meet—the French Aeronautical Association and the weekly *Les Ailes*—point with pride to the fact that as a result of these experiments France succeeded within less than a year in increasing the world's glider duration record from 3 hr. to 8 hr., far outstripping thus the remarkable German achievements of 1922. These circles also emphasize the fact, which is doubtless true, that the advent of the Dewointine light plane, with its extraordinary economic performance, has been a direct consequence of the Combegrasse meet.

The opponents of this glider and light plane movement are very dogmatic in their views. They claim as a body that the tendency toward more economic airplanes not only lacks any practical value, but that it even will lead to the construction of dangerous, under-powered flying machines. Some go so far as to say that the glider movement was engineered by Germany for the purpose of detracting France's attention from the construction of "better airplanes" which, in their opinion can only be accomplished by an increase, and not a decrease, in horsepower. It may be seen from this example that opinion in France is wrought up over this question to the point where dispassionate criticism becomes almost impossible.

It is true, that some advocates of the light plane make extravagant claims; but in the adverse camp the views are so obviously biased against anything that smacks of gliding and "economical flight" that their arguments often reach the heights of absurdity.

"A Step Backward"—says Captain Fonck

A striking example of the extremes to which the anti-glider school will go in its opposition to "economical flight" is furnished by a recent interview of Capt. René Fonck, the leading French Ace, who represents the Department of Vosges in the Chamber of Deputies and is president of the French Aeronautical League. The latter body, a popular association counting some 40,000 members, is devoted to the upbuilding of French air power and aerial supremacy. It has branch organizations in the principal cities of France and her Colonies, and is an influential body.

In the opinion of Captain Fonck the "aerial flivver" is not progress; it's a step backward.

"Airplane progress does not lie in the direction of decreased horsepower, but rather in increased speed," Captain Fonck declared. "Show me an invention whereby man can fly 500 kilometers an hour; tell me of an experimenter who flew across the Atlantic from London to New York between sunrise and sunset, and I will be the first to praise his contribution to the science of the air.

"But Barbot is taking us back to where we started when Blériot flew across the Channel in 1909. Blériot had an 18-horsepower engine; Barbot has a 15-horsepower. But consider the improvements which have been made in automotive engine construction since 1909. And think of the difference between the wabbly poorly constructed airplane of Blériot and the 1923 gliding plane which Barbot flew.

"The future of aviation lies in increasing the power of the motor and the speed of the plane without decreasing the weight."

Low-Powered vs. Under-Powered Flight

We have italicized Captain Fonck's last sentence to show the type of argument some of the foremost opponents of the light plane use against low-powered flight. The anti-glider school frequently claims that low-powered flight is synonymous with *under-powered* flight, when as a matter of fact it is nothing of the sort. Blériot's 18 hp. plane to which Captain Fonck refers was under-powered, for it had no reserve power whatsoever. But an airplane that can safely fly using but two-thirds the power of a 15 hp. engine—such as the Dewoitine—is obviously a safer machine than one which requires for horizontal flight 80 hp. out of the 100 which the engine develops, for the light plane will have 50 per cent reserve power as against 25 per cent for the more heavily engined ship. Furthermore, if such a light plane has a L/D of say 16—a figure which some of them almost attain—it will be much safer to land than the heavily engined type of plane which, as a rule, has a gliding angle not much in excess of 8. Assuming that both ships glide at the same speed, the light plane would glide twice as far, but as the latter, being more lightly loaded per wing area, would also glide slower, it follows that the light plane will have an immense superiority over the heavy ship in choosing its landing place in case of engine trouble.

Photo Kadel & Herbert

Georges Barbot, pilot of the Dewoitine light plane holding the 15 hp. Clerget engine with which the little ship is powered

"If war were declared tomorrow what would we do for aircraft?"

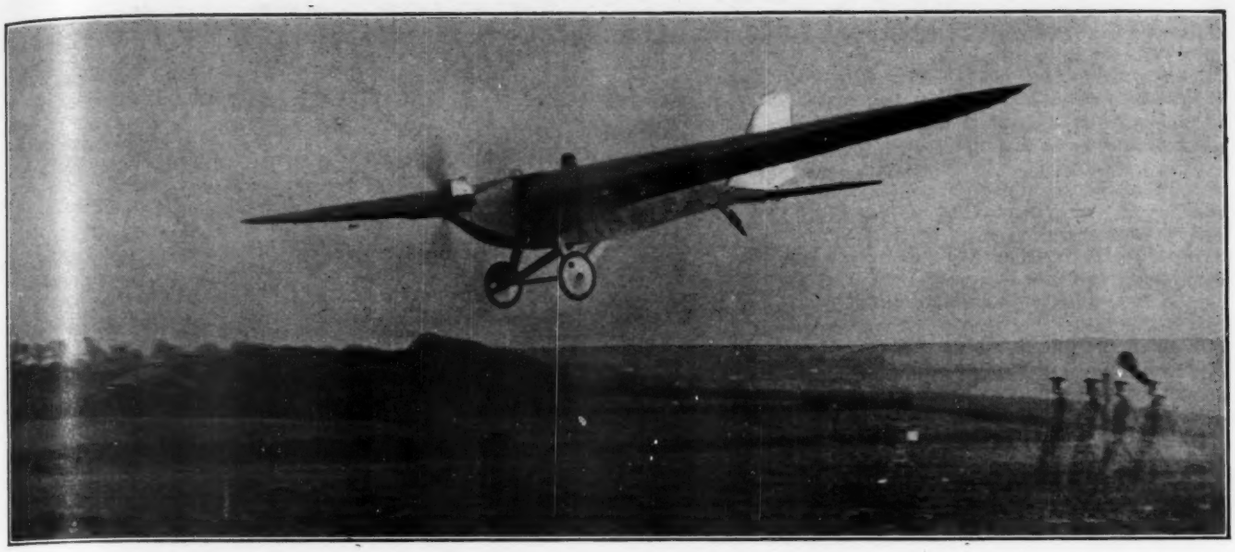


Photo International

Dewoitine light plane (15 hp. Clerget engine) landing after a trial flight. It is on this little ship that Georges Barbot crossed the English Channel in both directions

Unfortunately, there is one flaw in this flat gliding feature of light planes, at any rate, as exemplified by the performance of the Dewoitine, and this is that owing to its light wing loading the ship "floats" or "kites" (as it is also called) a considerable distance before it can be put down on a field. This rather serious drawback will have to be overcome before low powered flight can be considered a practical means of locomotion, for an airplane which can take off in twenty yards and yet is unable to land in two hundred would obviously be of little practical value.

It will be argued that such a concept of aviation will lead us straight to building slow airplanes which will be unable to fight adverse winds and that such ships will defeat the very purpose of power flight, which is high speed. This is taking an extreme view which is not justified by a dispassionate analysis of the question.

Toward Greater Efficiency

The incessant contest for airplanes capable of higher speed, quicker climb and greater carrying capacity will in no way be hampered by the advent of the light plane; on the contrary it will benefit thereby. Far-seeing aircraft designers will no longer attempt to improve performances by merely piling horsepower upon horsepower; instead, they will endeavor to accomplish this result by the use of improved aerofoils and aerodynamic "forms". This will make for greater power economy, and so for cheaper airplanes. No aeronautical engineer will seriously entertain the extraordinary view expressed by Captain Fonck that progress in aviation will only come from a continual increase in horsepower and that a decrease in the structural weight of airplanes is quite immaterial. This would be going counter the very basic principles from which power flight was evolved and which still governs its development.

It is probable that pure speed planes will benefit from the improved aerofoils derived from gliding experiments to a lesser extent than heavy load carriers, although it is difficult to believe that they will not profit at all. Raymond Jamin, the distinguished technical editor of *L'Aéro-Sports* of Paris, recently expressed the interesting view that experience in light plane design will materially help French constructors in their attempt to regain the world's records which America has appropriated. He writes:

"Considerable progress has been achieved in aviation during the past year. We have witnessed the struggle of two schools of airplane construction: the champions of the externally trussed biplane and those of the cantilever monoplane.

"Until recently, the struggle was undecided: the duration and distance records passed from the Fokker to the Goliath and vice versa. Now, it is these records which decide the question of airplane efficiency, for, as I have often repeated, they are the "type-records" of aviation. For this reason the American Fokker of Kelly and Macready must be considered as the best airplane in existence until its admirable performances will have been exceeded.

"Much anxiety was expressed in the press of late on this account. Well, we may be certain that the Dewoitine light plane is a distinct step toward our recapturing the world's records. With the experience gained in gliding experiments and light plane design, M. Dewoitine should be able to build airplanes which will beat the American distance and altitude records. If those in power really wish us to regain these records, they should encourage the engineer who has produced an airplane having the following characteristics: High speed 56 m.p.h.; ceiling 13,000 ft.; range 450 miles—all with a power loading of 37½ lb. These characteristics are too significant to require any comment."

It may be noted in passing that the performance of the Dewoitine light plane since it was refitted with a more powerful engine (15 hp. Clerget as against the 8-10 hp. Anzani originally used) bears out what was editorially expressed in AVIATION in the issue of April 30, last, right after the news of the first trial flight of this ship had reached America. We wrote among others that "while the Dewoitine light plane may be too lightly powered for the practical purposes of even a sport machine, it should be remembered that this is but an experimental ship with which the constructor obviously wished to make a 'maximum' demonstration." This really seems to have been the case, for after it had been demonstrated that the machine *could* fly with from 5 to 8 horsepower, it was found that a larger reserve in power was desirable for all-round purposes and consequently a bigger engine was fitted. With this engine the power loading obviously decreased, but it made the little ship really fliable.

Advent of the Touring Plane

It is reasonable to expect that one of the principal results of the success of the Dewoitine light plane will be the advent of a low powered, inexpensive touring plane with a moderate performance. In this country, where we probably have the largest number of owner-pilots in the world, this question of the light plane assumes particular importance. The ease with which government surplus flying material can be sold to individual owners shows that there is a distinct demand for

cheap airplanes, and that only the necessarily high price of our present types of airplanes keeps a good many people from buying a flying machine for their own use. This is particularly true in the Middle West, where flying conditions are ideal by reason of ground and weather alike, though it also applies to a lesser extent all over the United States.

Hence it stands to reason that our aircraft manufacturers should make a determined effort to create the light sport and touring plane. The design and construction of such ships has the advantage of not requiring a large initial outlay of capital, so that it should be possible to sell them at a moderate price. But the design of an efficient light plane requires in the first place gliding experiments. This is a point which is often overlooked and which the success of the Dewoitine plane has placed beyond any doubt or controversy. This little ship has a wing curve which was developed as the result of extensive gliding experiments, and which differs from all known aerofoils. Its characteristics are not to be found in any work on aerodynamics and as a matter of fact we have the word of M. Dewoitine that he did not even have the time to test it in a wind tunnel before Barbot crossed the English Channel.

Lessons from Gliding Experiments

The valuable lessons which may be learned from gliding experiments are well brought out in a very complete report on the Biskra gliding meet which was published in the April issue of *L'Aérophile* under the signature of Major Brocard, one time commandant of the famous "Stork Squadron" of the French Air Service. Major Brocard was chief contest official of the Aero Club of France at the Biskra meet. Restrictions of space prevent us from giving at present a translation of this report, but we suggest that all those interested in this question peruse it. A brief summary of this report appeared in *Les Ailes*, and as it gives the author's conclusions on the significance of gliding experiments, it is translated below. Major Brocard writes:

"Motorless flight experiments offer an obvious interest from the laboratory viewpoint, but even more so from the practical point of view. Incidentally, it is absolutely immaterial whether these machines carry a small engine or not. In most discussions, people seem to attach importance to this point, when as a matter of fact it has none whatever.

"The chief point that should be brought out is that a flying machine which carries a small engine can start from almost any place without any danger, whereas pure gliders, which are deprived of this important auxiliary, have to be launched into the air in a rather rough and often hazardous manner.

"But that is not the real question. The main point about motorless flight is that it enables one to become familiar with, and to measure all kinds of atmospheric energy, little known as yet, which are either contributory or deterrent to flight. We must learn to find their location and know their strength and size. We must also investigate in this full scale laboratory the form, weight and size of the birds which are capable of using these unknown forces to their best advantage, and in a better manner than our present day airplanes. Such flying laboratory experiments are not only thrilling; they also afford immediate practical applications.

"While the results of Vauville and Biskra do not mark a revolution in the art of flying, they nevertheless caused a surprise which we probably would not have experienced if Nieuport were still alive. They are of capital importance in regard to the future of aviation, for they cannot fail to lead back into what I should like to call the Nieuport way those technicians who are too much hypnotized by the power loading (pounds per horsepower) and not enough by the wing loading (pounds per square foot) of the airplane."

Some Ancient Aviation History

Major Brocard's reference to the "Nieuport way" may require some elucidation for the benefit of our readers. Edouard Nieuport, who died in a flying accident in 1912, was a great pioneer and his loss was a severe blow to France. It was he who was the first to demonstrate the importance of streamlining the fuselage in order to decrease parasite resistance to a minimum.

To prove his contention which the experts of the time received with much skepticism he built in 1911 a well streamlined tractor monoplane which was fitted with a 28 hp. horizontal opposed air-cooled engine. With this machine he beat, all other things being equal, the performance of what was then considered the accepted type of single-seater monoplane, which was fitted with a 50 hp. engine. His premature death unfortunately put a stop to the "Nieuport way" which probably would have led us at an early date toward the construction of more efficient *and* more economical airplanes, and left the field clear for the school which championed the accumulation of horsepower for improved performances.

As a matter of fact, a couple of years after Nieuport's death the regular single-seater monoplane had improved very little in performance although its power had in the meantime been boosted to 80 hp., while the standard two-seater of 1911 which flew tolerably well with an 80 hp. engine, two years later carried 100 hp. and 120 hp. engines with only a small increase in useful load and hardly any increase in reserve power. There were some far-sighted critics who pointed out that aviation was then getting against a stone wall, but their prophecies were disregarded. The war, with its hectic demand for more and improved airplanes in the shortest possible time, only gave a new impetus to the "greater-power" school, and the question of greater efficiency through greater power economy was relegated to the rear plan.

The French gliding and low power flight experiments are therefore to be welcomed as inaugurating an era where engineers will endeavor to *make one hundred horsepower do the work of two hundred.* That is really the whole question in a nutshell, which those fighting the light plane movement with all sorts of specious arguments should recognize, unless they do not want to recognize it.

The light plane will not be a substitute for the fighter, or the bomber, or the express plane; it will remain in a class in itself, offering a cheap and pleasurable means of sport and touring to the owner-pilot of moderate means. At the same time, the light plane points the way toward ships in which high performance will be obtained not by an extravagant expenditure of horsepower but by a judicious combination of improved aerofoils, aerodynamic forms and horsepower. With this program in view we need extensive gliding experiments; we also require a small and reliable air-cooled engine, developing between ten and twenty horsepower. The gliding meet which the National Aeronautic Association is organizing affords American pilots the first opportunity to conduct motorless flight experiments. And our engine designers, who are second to none, as our holding of the world's records demonstrates, will give us the necessary light plane power plants.

Jet Propulsion for Airplanes

N.A.C.A. Report No. 159

Report No. 159 of the National Advisory Committee for Aeronautics by Edgar Buckingham is a description of a method of propelling airplanes by the reaction of jet propulsion.

Air is compressed and mixed with fuel in a combustion chamber, where the mixture burns at constant pressure. The combustion products issue through a nozzle, and the reaction of the jet constitutes the thrust.

Data are available for an approximate comparison of the performance of such a device with that of the motor-driven air screw. The computations are outlined and the results given by tables and curves.

The relative fuel consumption and weight of machinery for the jet decreases as the flying speed increases; but at 250 miles per hour the jet would still take about four times as much fuel per thrust horsepower-hour as the air screw, and the power plant would be heavier and much more complicated.

Propulsion by the reaction of a simple jet cannot compete, in any respect, with air screw propulsion at such flying speeds as are now in prospect.

A copy of Report No. 159 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

"If war were declared tomorrow what would we do for aircraft?"

New Transcontinental Attempt

The Army Air Service, having already to its credit a non-stop flight across the American continent, is now planning another trans-continental flight, which it is hoped to accomplish between sunrise and sunset.

The officer selected to make this remarkable flight is Lieut. Russell L. Maughan, A.A.S., the champion high speed airplane pilot, who holds the official world's record for speed over 100 and 200 kilometers over a closed circuit and for one kilometer straightaway. This proposed flight, which is to be made between June 15 and 25, will start from Mitchel Field, L. I., N. Y., and end at San Francisco, it being calculated that flying along this route advantage could be taken of the air mail stations as possible emergency landing fields.

The plane to be used will be the Curtiss pursuit ship, which was developed from the Curtiss R6 racer, in which Lieutenants Maughan and Maitland made their spectacular speed flights. It is equipped with a Curtiss CD12 engine of 400 hp., and has a high speed of 169 m.p.h. One of the outstanding features of this airplane is its remarkable climbing ability. At the take-off she can climb 2500 ft. in one minute, or at the astonishing rate of 130 m.p.h. From 6500 ft. she can climb 1710 ft. per minute and starting from an altitude of 15,000 ft., can climb 1390 ft. per minute.

At the maximum altitude that the plane can attain with her normal equipment (28,600 ft.), it can travel at the rate of 113 m.p.h. in the rarified atmosphere. The weight of the airplane empty is 1879 lb.; loaded 2784 lb. The overall length is 22 ft., 10 in.; height 8 ft. 8 in.; the span is 32 ft. and the positive stagger of the wings is 34 in. The chord of the upper wing is 5 ft., and the lower wing 4 ft.; the gap is 4 ft. 7 in. The total wing area is 265.3 sq. ft.

The landing speed is 61.5 m.p.h. The ship carries 86 gal. of gasoline, which gives the airplane a cruising radius well over the two hours required for pursuit ships. The cockpit and the wings are so arranged that the pilot obtains the greatest possible angle of vision. The landing gear has the V-shaped axle feature which enables the ship to land on rough terrain with very little risk. The fuselage of the ship is of steel construction and may be opened in sections with the greatest ease, and all the engine parts can be quickly inspected or repaired with the minimum time and labor spent in the removal of the cowling.

In a recent flight an Army Air Service pilot drove this plane at a speed of 152 m.p.h. at 15,000 ft. altitude.

The first leg of the flight will be from New York to Dayton, Ohio, a distance of approximately 570 miles. This will be followed by another jump of similar distance to St. Joseph, Mo., thence 540 miles to Cheyenne, Wyo., thence 470 miles to Salduro, Utah, and finally 420 miles to Crissy Field, Presidio of San Francisco. Lieutenant Maughan estimates that he will have 20 hr. of daylight in which to accomplish his flight. Leaving New York at 4 a. m. and landing at San Francisco at 9 p. m. covers a stretch of 17 hr. To this may be added the three hours gained in the change of time from the Atlantic to the Pacific Coast. Computing the average speed at 160 m.p.h., the 2,670 miles between New York and San Francisco should be covered in 16.7 hr., the remaining time being consumed by the four 30-min. stops and the 1.3 hr. for repairs.

Test of ZR1 Power Cars

To make sure that the machinery installation in the power cars of the ZR1 will operate satisfactorily while in flight, each car is being subjected to a performance test duplicating as nearly as possible conditions of flight. The car, complete with all its machinery, controls and various instruments, is suspended from the roof of the small hangar at the Naval Aircraft Factory in a manner to duplicate as nearly as possible the suspension on the ship. The same number of wires are fitted of the same size and with the same slope as on the ship. Struts are likewise fitted and have the same arrangement as on the ship.

In actual flight a steady current sweeps by and through the car due to the motion of the ship through the air. In order to supply this wind a Liberty engine with four bladed propeller is set up about fifteen feet ahead of the car and by suitable control throws a current of air along it at any desired speed. As the Packard engine power is increased the speed of the air from the Liberty may be increased or it may be kept at the lowest value of about 35 m.p.h. In the former case the condition of gradually increasing the speed of the airship by simultaneous use of all engines is simulated; in the latter case the condition of operating the ship with only one or two engines full out.

This method of testing has been applied only to one car, but it has resulted in many changes which have had the effect of simplifying the installation and making it more certain that the entire power plant will operate more successfully in flight. Several arrangements of starting gear have been tried and three or four different mufflers. Types of both have been developed which operate with sufficient success to be usable, but sufficient information has been obtained to point toward much more successful types which are now being prepared.

The performance of the engines and gears have been notably excellent. The engines being of the high compression type have been difficult to start, but once in operation gave no trouble and are a delight to watch and listen to. The clutches and gears have developed minor difficulties which were easily remedied, but have likewise operated most satisfactorily and with great quietness. The most gratifying result of the tests was the demonstration that the car structure was extremely rigid and free from vibration.

The telephone system to be fitted on the ship has also been tested out in the course of these car trials. A sample instrument was installed and used for talking while the engine was in full operation. It was found that, using an ordinary tone of voice, transmission to an outside receiver was very satisfactory and that reception was equally good.

Floyd J. Logan is Active

Floyd J. Logan of Cleveland, Ohio, jobber in airplanes, flying boats, motors and aircraft supplies, who is also Curtiss distributor in Ohio, opens his fifth successful season. The firm is carrying a large stock of aircraft and supplies, with orders coming in from all over the country. Its trade is also extending to foreign countries.

Mr. Logan has made it a principle to sell only first class merchandise, and if a customer is not satisfied in any respect, the matter is adjusted to his satisfaction regardless of the loss it may entail to the firm. These principles have built up for Mr. Logan an enviable reputation of fair dealing.

In a letter to AVIATION, Mr. Logan states that the outlook for the present flying season is fairly good, and undoubtedly better than last year. The best of the Army surplus ships have been disposed of and are now in the hands of users, with the exception of a few that are still to be issued, and this will, he believes, cause an advance in the price of airplanes.

Second French Gliding Meet

The Association Française Aerienne of Paris, which will hold the Second French Experimental Congress of Motorless Flight from Aug. 5 to 26, 1923, near Cherbourg, France, advises that it received nine entries for that event up to May 31, the closing date of normal fee entries. Entries accompanied with double entry fee will be received until July 1. So far only French and Belgian machines have entered, but the Association confidently hopes that before the final closing date it will also receive entries from the United States, Great Britain and Czechoslovakia.

Particulars regarding entries may be obtained from the Secretary, Association Française Aerienne, 17 Boulevard des Batignolles, Paris, France.

"If war were declared tomorrow what would we do for aircraft?"

Dewoitine Light Plane in America

Barbot Flies it at Roosevelt Field

Georges Barbot, the French pilot who recently rose to international fame by crossing the English Channel in both directions on a light plane fitted with a 15 hp. engine, arrived Tuesday, May 29, in New York for the purpose of demonstrating his little ship to the American public. He was accompanied by his mechanic, Pierre Pradère. The Dewoitine light plane arrrived on the same steamer, packed in a single case of ordinary size, which permitted its being stowed in the hold. The little ship was promptly carried on a motor truck to Roosevelt Field, Westbury, L. I. where it was assembled for the demonstration sponsored by the *Daily News* of New York.

On Friday, June 1, the Dewoitine light plane made its maiden flight in America. Barbot's first flight started soon after 5 p. m. A 25 m.p.h. wind was blowing as the Frenchman wheeled his airplane from the hangar at Roosevelt Field. He climbed into the cockpit and Pierre Pradère, a mechanic, started the tiny propeller with one hand. After one swing of the propeller, the motor was purring, the explosion coming from the two tiny cylinders with the rhythm of a sewing machine.

When the air flivver moved down the field it moved slowly and easily, so slowly in fact that two racing dogs yapped at the rudder up to the moment Barbot opened the throttle wide. In thirty yards the wheels left the ground and Barbot was flying. Aero experts from surrounding flying fields gasped with surprise.

The ship climbed straight into the wind, gaining altitude rapidly. At 1,000 ft. the wind velocity increased and Barbot, by throttling the motor, was soaring like a gull. Then he opened the throttle and went ahead. Turning down wind, he again throttled the motor.

A gust of wind from the South blew over the field and the spectators saw the novel sight of a forward propelled plane moving backward. It was noted that in rounding the field the little plane banked only slightly.

Barbot maintained an average speed of about 45 m.p.h. His maximum speed on the first demonstration was estimated at 70 miles. After a fifteen-minute flight Barbot landed at a speed of 30 m.p.h. In his glide toward earth his pathway lay in the direction of a group of trees, which on account of the air currents offered a good test of its ability to land. Barbot passed gracefully over the tree tops, hovered over the field and came to the ground in a perfect landing.

He smoked a cigarette, then signaled to his mechanic, who again started the motor. Once more Barbot took off and practically repeated his performance of the first flight. He flew for twenty more minutes, reaching an altitude of 2,000 ft.

Lawrence Sperry, builder of the U. S. Army "Messenger," one of the smallest American planes in existence was one of the first to congratulate the French aviator. "It was a wonderful performance," he said. "You deserve great credit." Mr. Russell, President of the Curtiss Aeroplane and Motor Corp., was another who offered congratulations.

"How much gasoline did you use?" he was asked after he had finished flying. He measured the amount in the gasoline tank.

"Oh, about a pint," he said.

"How much does the tank hold?" asked Mr. Sperry.

"Three galloons. This plane cost about $1,500," Barbot added, "and you can fly sixty miles on a gallon of gas. This is less than half a cent a mile. M. Dewoitine, who designed the plane says these planes can be built in quantity for less than $400. This is cheaper cost and cheaper operation than any low priced car of good quality."

The Dewoitine light plane has a well streamlined fuselage, 15 ft. in length, and made of laminated birch. The wings, about 40 ft. in span, are thick at the roots where they merge into the streamline fuselage, and taper out to a knife edge at the tips. The wings are internally braced, as the photograph shows. Its weight loaded, minus the pilot is approximately 400 lb. The 15 hp. Clerget 2-cylinder horizontal opposed type engine weighs about 35 lb.

Emil Dewoitine, designer and builder of the little plane, arrived in New York Saturday, June 3, in time to witness a second demonstration by Barbot. The pilot had intended to fly from Roosevelt Field to Tarrytown, N. Y., a distance of 35 miles, but a 70-mile gale blocked his efforts.

He was forced to ascend to an elevation of more than 6,000 ft., and in doing so he lost his pilot plane, a Curtiss machine operated by B. L. Pierce. Thoroughly unfamiliar with the terrain below him, Barbot turned his little monoplane about and glided back to Hempstead. He had no difficulty in finding the landing field, although he ran into another storm that hindered his descent.

When Barbot started out, at 1:40 p. m., he had three gallons of gasoline in his tank and one-half pint of oil. An hour and fifty minutes later, when he returned from a flight totaling more than seventy-five miles, there still were two gallons left in the gasoline tank, and little oil had been consumed.

Columbus Air Terminal

The Aero Club of Columbus, Ohio, recently issued an attractive folder giving interesting facts on the Columbus Air Terminal which the club has been instrumental in organizing with the assistance of some public spirited citizens. This airport is located along East Broad St., 6 miles from the Ohio State Capital and adjoining the Columbus Country Club. The folder says among others:

"Many types of planes will be kept at the field for training purposes, experimental work and for regular military duty. The equipment to be furnished by the Government includes barracks, steel hangars, repair shops, machinery and everything necessary to make the Columbus Air Terminal a complete airdrome. Illumination of the field has been provided for, and regular night flights between here and Dayton will begin shortly.

"The club contemplates the maintenance of a hangar and ships for the use of its members at any time. Licensed pilots will always be available and members may make trips to any points at rates covering only the actual cost of operation."

The folder also gives some pertinent figures on the safety of civil flying and on the airplane time between Columbus and other cities.

Airport at St. Joseph, Mo.

Rosecrans Municipal Air Field, at St. Joseph, Mo. which was recently inaugurated, is a two-way landing field, with the longest distance running North and South. The dimensions are: North and South 2417 ft.; East and West 1323 ft. The field has been passed on by Captain Boland, A.S., of Fort Riley, Kan., who commended the local Aviation Committee very highly on the beautiful approaches and surroundings.

The field offers gasoline, oil and water service, and the building of a hangar is contemplated. The prevailing winds around St. Joseph are mostly North and South, sometimes southeast and southwest.

Trophy Design Contest

B. H. Mulvihill, vice president of the National Aeronautic Association of U.S.A., announces a prize competition for art schools of $100, $50 and $25 for the three best designs for a model airplane trophy for which boys will compete at the international airplane races in St. Louis in October.

The judging for the final awards to the three winners will be held about Aug. 1, at National headquarters of the Association, when the names of the successful sculptors will be announced and photographs of the three best models issued for publication.

The de Bothezat Helicopter

A Tribute by Col. T. H. Bane

Prof. George de Bothezat, inventor of the helicopter with which highly interesting trials have been conducted at McCook Field, Dayton, Ohio, for the past six months, recently was paid a fine tribute on the part of Col. T. H. Bane, former commandant of McCook Field, who piloted the machine on most of its trial flights.

Colonel Bane's letter reads in part as follows:

"As I am leaving for California in a few days, I desire to say a few words of appreciation of the work you have done in developing the de Bothezat helicopter at McCook Field.

"In view of the fact that I initiated this work while Chief of the Engineering Division of the Air Service and Commanding Officer of the Air Service Experimental Station at McCook Field and have followed it more closely than any one in the Air Service, I feel that I am in a position to judge definitely as to the character and magnitude of this accomplishment.

"In the spring of 1921 I became convinced that the Air Service should undertake some positive steps toward the solution of the very difficult problem of the helicopter. I realized that the United States was the only Great Power that was not actively engaged on experimental construction of helicopters. Having been for several years in a position to know rather well the American personnel engaged in aeronautical engineering, I discussed the problem with all who might have in any way contributed to its solution.

Basically a Propeller Problem

"As the problem was basically a propeller problem, and as I recognized that your contribution to the science of propellers placed you as the world's leading authority on propellers of all kinds, you can readily understand my enthusiasm when you proposed to me in May, 1921, your solution of the helicopter problem. I saw at once that if this problem was to be undertaken you were the man to do it. I succeeded in obtaining authority from Major General Menoher to contract with you to build the helicopter at McCook Field. The contract was signed in June, 1921, and the work started promptly thereafter.

"There were the usual delays in obtaining material and in having certain parts built elsewhere. But those delays were not serious and we were quite used to them in similar experimental work.

"I was greatly impressed with the expedition with which you carried the work along. Frankly, I had feared that you, as a scientist, might be rather impractical in carrying out the practical details of constructing a theoretical design. But I found that in handling the work you showed an exceptional engineering experience and that your shop was run in a very practical manner.

No Trouble from Gears

"Of course, I never believed the gears would work. I think I told you I expected them to fly all over the aerodrome on the first attempt to run the machine. I don't believe anyone else had much confidence in the gears. It is particularly interesting to note this when after 70 or 80 flights and very severe usage, the gears have given absolutely no trouble of any sort and have proven practically perfect. In many ways I believe the successful design of the gears is the most remarkable thing about the helicopter. Although the lifting power of your propellers (as shown by the four men flight) and the general stability of your helicopter are also quite remarkable things. It is particularly pleasing to note your skill in gear work as in my opinion the entire future of aeronautics depends on a successful motor-group where gears are the whole problem. I hope you may have an opportunity of obtaining a solution to this problem as you have certainly established your ability to do so.

"Your helicopter to date has really exceeded my expectations in performance. The flights with two and three men, in addition to the pilot, I consider especially significant. As stated above, I feared that the gears might not stand up, when as a matter of fact, they have given no trouble whatsoever. The additional payment clauses were put into the contract as prizes and not as requirements that must be met. But I realize now that the specifications for the prize performances of the first helicopter were entirely too severe. Altitude was too greatly emphasized. However, I was not the only one to predict poorly the different stages through which the development of the helicopter would have to go.

"I believe an analysis of the results obtained would show that as much has been accomplished as in any other first successful attempt of similar difficulty. For example, I certainly believe that your helicopter has performed as well as the first airplane and it is my sincere belief that your helicopter is the biggest aeronautical achievement since the first flights of the Wright Brothers.

"The tendency of the layman and even of others who should know better is to compare the performances of your helicopter with that of an airplane after twenty years of development. Of course we know this first machine is only a baby that has to grow, but when the basic principles herein demonstrated to be correct are further worked out, more mature performances will naturally follow.

The "Feel" of a Helicopter

"I have particularly enjoyed my experience as pilot of this helicopter. It takes some time to get the "feel" of a new machine of this sort. On some flights I felt as though I could anticipate every oscillation or movement and correct for it, on others I was a little too slow. I can't help thinking that in more skilled hands better results still would have been obtained, but of course skilled helicopter pilots do not yet exist.

"I want to take this occasion to thank you for your patience with me and also to let you know that the very close association with a man with such a complete understanding of all the problems connected with modern aeronautics especially aerodynamics and propellers has been a great help and assistance to me. I can only hope that your knowledge may continue to be used for the benefit of American Aeronautics.

"In conclusion I wish to congratulate you upon the achievements of the de Bothezat helicopter. It is a great credit to the American Air Service and if the Air Service and the public are slow to recognize this, don't be discouraged. It was years before any one in America recognized that the Wright Brothers had contributed to the renown of America. It is beyond the ability of the average man to foresee the importance of a new discovery whose basic principles have just been experimentally verified.'

International Air Congress, London

The arrangements for the International Air Congress which is to take place in London at the Institution of Civil Engineers, Great George Street, London, S. W. I., from June 25 to 30 are now approaching completion. Expectations regarding the value of the papers submitted have been more than realized and the interest of the meetings is fully assured. The papers, which will cover every field of aeronautical development, are thoroughly international in character as contributions have been received from representatives of America, Belgium, Denmark, France, Holland, Italy, Spain and Sweden in addition to Great Britain. As the time available is limited, members of the Lectures Committee are now engaged in selecting the 36 papers to be read at the meetings from the much larger number sent in.

As there has been some doubt as to when the membership of the Congress closes and we are authorized to state that applications will be accepted up to Saturday, June 9, 1923. Headquarters of the Congress are at 7 Albemarle St., London, W 1, England.

A list of visits will shortly be made public which will include various Government experimental and research establishments and Royal Air Force Stations.

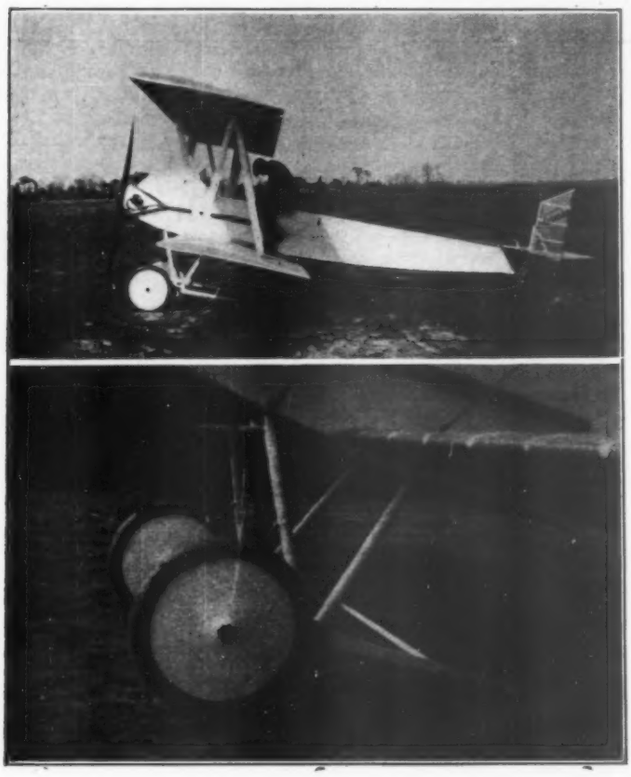
"If war were declared tomorrow what would we do for aircraft?"

Ludington Exhibition Co.

The Ludington Exhibition Co. has been formed for the purpose of demonstrating and exhibiting the 1923 model Sport Farman 2 seater. At present flying is being done from the field of G. S. Ireland, Curtiss Eastern distributor, at Pine Valley, N. J., twelve miles East of Philadelphia.

The 1923 Farman Sport plane which is illustrated herewith is of particular interest on account of its new landing gear, which is also shown in close-up.

The landing gear wheels and their axle are placed not as usual at the point of the "V" of the landing gear strut, but some distance ahead of this point. A wooden ski connects each wheel with the "V" strut of the landing gear and runs



The 1923 model Farman sport plane, with a close-up view of the new landing gear

on back to the ground. The ski is attached to the "V" strut by a cable in front and rear. This arrangement moves back considerably the center of gravity of the machine behind the point of contact of the landing gear wheels. The weight of the machine is thus equally distributed between the wheels and the heels of the skis, which act as a brake and eliminate long rolling of the machine.

It is also possible to make a quick take-off as the motor will run full out and the tail of the machine is raised, thus releasing the brake or ski and sending the machine off very quickly. In actual tests, landings have been made without difficulty in 20 ft. and take-offs in the space of some 60 ft. Another advantage is that it is almost impossible to nose this machine over when making a landing in a ploughed field.

The performance of this little ship has attracted considerable attention. Its span is 23 ft. 3 in. and its length 19 ft. 11 in. The weight empty is 450 pounds and loaded 890 pounds, the useful load being 350 pounds. This Company is using the 6 cylinder 60 H. P. Anzani motor. It appears to be eminently satisfactory and produces a maximum speed of 85 m. p. h. at just over 1250 r. p. m., while the ship has been flown at 800 r. p. m. at speeds around 30 m. p. h. with the greatest ease. The climbing ability is remarkable, being in the neighborhood of a thousand feet a minute. The operating costs are extremely low, the fuel consumption being less than four gallons an hour.

It is planned to enter this machine in all events for which it is eligible at every officially sanctioned meet it can attend. Although the Sport Farman is capable of performing every known acrobatic maneuver, it is the policy of the Company not to permit its use for stunting purposes and to acquaint the public in every possible way with the safety of properly controlled flying. The Company is anxious to be notified of any and all meets that are to be held during the coming season, so that it may complete its schedule.

The officers of the Ludington Exhibition Co. (611 Widener Building, Philadelphia) are: C. T. Ludington, president and treasurer: W. S. Ludington, vice president; W. Wallace Kellett, Secretary; Robert P. Hewitt, Pilot.

Vital Need of Aviation in U.S.A.

The inevitable awakening of the United States to the vital need of commercial aeronautics as the result of the tremendous aerial enterprises of European countries, is stressed by Howard E. Coffin, of Detroit, president of the National Aeronautic Association of U. S. A., in a statement urging activity in every section of the country.

"Following the meetings of the International Chamber of Commerce in Rome," said Mr. Coffin, "Our American delegates, who secured the adoption of a resolution placing the Rome congress on record endorsing the development of the commercial side of aviation as a powerful factor in the betterment of the commercial relations of the world, visited practically all European countries under conditions most favorable for observation. I have come home more than ever convinced by what I saw of the tremendous enterprise in aeronautics overseas of the inevitable early application of aircraft to the purposes of trade and commerce. I am also unshakably impressed that the vital need for air development in the United States, as an insurance to our continued national security and welfare must be no longer neglected.

"Business men," declared Mr. Coffin, "may consistently be charged with being derelict to their duty if they now fail to give direction to the great influence of aeronautics upon our economic leadership and our national independence. The National Aeronautic Association, having sponsored the patriotic movement toward the goal of American supremacy in the air, has a big work cut out for it both now and in the years to come. The responsibility for the success of the movement and of the association's task lies heavily upon its national and district officials and the membership itself. With the moral and financial support of a membership representing every state and community in the country we can succeed and will succeed in our purpose to advance commercial aeronautics, our program of legislation, and the adoption by the government of a definite, comprehensive and continuing policy of air development."

Contract Awarded to L.W.F.

Three contracts for 56 planes at a total cost of $892,870.10 have been awarded to the L.W.F. Engineering Co. Two of the contracts are for the Navy, and the other for the Army, according to recent press reports.

An award of $3,500 was made to the L.W.F. company for their design for Type T3 plane. This type plane is designed primarily for Army transport work, carrying six passengers and a crew of two with baggage. They can readily be converted into bombers or to carry over a ton of freight.

One of the Navy contracts is for twenty torpedo planes, type LT2 biplane, while the second contract is for twenty-six Type 1, 3-seater observation planes. The company is just completing a contract for thirty-five Martin bombers. At the present time L.W.F. employs 350 skilled workmen.

"If war were declared tomorrow what would we do for aircraft?"

ARMY AND NAVY AIR NEWS

U. S. ARMY AIR SERVICE

Department of Photography at Technical School

The Department of Photography of the Air Service Technical School at Chanute Field, last March began the instruction of the first class in photography at that field. This department, formerly the Air Service School of Photography, was removed last summer from Langley Field to Chanute Field, and with the Communications and Mechanics Schools consolidated into the present Air Service Technical School.

The Photographic Department occupies two of the wooden type of hangars, the interiors of which, affording over 15,000 sq. ft. of floor space, having been partitioned into offices, work rooms and laboratories thoroughly equipped with necessary electric illumination, power, water supply and ventilation systems.

The course is designed to include all instruction in ground and aerial photography required for Air Service needs, principally to train officers for the duties of a photo section commander and enlisted students for the work of such a section.

The department has at present one hangar filled with special DH4B photo planes for use in giving training in practical aerial photography, and plans are under way for the erection of an additional hangar to house the additional photographic airplanes needed.

The photographic class is composed of forty-nine officers and men. The Regular officers are: Lieut. (S.G.) Loverne A. Pope, U.S.N., 1st Lieuts. Charles Y. Banfill, Ray G. Harris, P. P. Hill, Ashley O. McKinley, Dache M. Reeves, all Air Service; 2nd Lt. Hayne D. Boyden, U.S.MA.; 2nd Lieuts. Leo. H. Dawson, David W. Goodrich, Edwin A. Hillery, Charles L. Williams, all A.S. The Reserve Corps officers are: Capt. Daniel E. Ellis, 1st Lt. E. C. Myland and 2nd Lts. Glenn Virgil Conrad, George W. Ade and Sidney W. Park. The 33 men include 4 marines.

The instruction staff of the Department of Photography includes Capt. Wm. D. Wheeler, Director, 1st Lieuts. J. K. McDuffie, James P. Hodges, Edwin B. Bobzien, James W. Hammond, Master Sgt. P. H. Hammer, Tech. Sgt. Charles C. Leiby, Staff Sgt. Aaron A. Porter, Sgts. Esten L. Crimm, Grover C. Gilbert, Arthur C. Witman, and Messrs. Charles L. Vance and Philip B. Keeler, civilian instructors.

In formal arrangements have been made with the U. S. Geological Survey to send to the School at a later date Maj. Charles E. Cooke, C.E., O.R.C., to give a course of lectures on the elements of topography and map making.

Death of Maj. Thomas Duncan

Maj Thomas Duncan, A.A.S. died at Bolling Field, D. C., May 25, 1923, as the result of an airplane accident. He was born in Washington Feb. 5, 1882, and was appointed from Pennsylvania a Cadet in the Military Academy in 1900; to Second Lieutenant April 11, 1905; to First Lieutenant Jan. 25, 1917; to Major, (temp.) Aug. 5, 1917. He was a graduate of the Artillery School, 1912, and of the School of the Line, 1921.

He joined the 69th Co., Coast Artillery, and served with it at Fort Monroe, Va., from June 23, 1905, to June 4, 1907; with 43rd Co. at Fort Terry, N. Y., to November 28, 1908; commanding 88th Co. at Fort Mansfield, R. I., to Feb. 12, 1909; with 43rd Co. at Fort Terry, N. Y., to July 14, 1909; on leave and changing station to Aug. 3, 1909; on recruiting service, Fort McDowell, Calif., to July 29, 1911; on leave and changing station to Aug. 28, 1911; student, C. A. School, Fort Monroe, Va., to July 6, 1912; on leave to Sept. 4, 1912; Ordnance Officer, Artillery District of Baltimore, Fort Howard, Md., to Dec. 18, 1912; duty with 140th, 40th and 21st Cos., C.A.C., at same station, to March 5, 1915; on duty at Fort Totten, N. Y., to July 14, 1915; en route to P. I. to Sept. 2, 1915; with 90th Co., C.A.C., at Fort Mills, P. I., to Oct., 1917; enroute to U. S. to Nov. 15 ,1917; on duty as Executive Officer at Kelly Field, Tex., to June 26, 1918; at Wilbur Wright Field (commanding) to Sept. 15, 1918; Chief Operations Sec., Department, Military Aeronautics, Washington, D. C., to Dec. 15, 1918; commanding Eberts Field, Ark., to Jan. 27 ,1919; on duty at Carlstrom Field, Fla., to Aug. 7, 1920; student, Army Service Schools, Ft. Leavenworth, Kans., to July 23, 1921; on leave to Aug. 23, 1921; duty with Organized Reserves, 8th Corps Area, Ft. Sam Houston, Tex., to Oct. 25, 1922; on duty in Office, Chief of Militia Bureau, Washington, D. C., to date of death.

He was buried with full military honors at Arlington National Cemetery at 2.30 p. m., Monday afternoon, May 28, 1923. The pall-bearers are announced as follows: Col. George F. Baltzell, Inf., Maj. Gerald C. Brant, A.S., Maj. J. W. S. Wuest, A.S., Maj. Henry T. Burgin, C.A.C., Maj. Frank Thorp, Jr., F.A., Maj. Henry B. Clagett, A.S., and Dr. Jesse L. Wagner.

Army Orders

Three months leave of absence granted Maj. James E. Chaney, A.S., with permission to visit United States. Major Chaney is air attache in Rome, Italy.

First Lieut. Melvin B. Asp, First Lieut. Irwin S. Amberg, and First Lieut. Walter B. Hough, A.S., relieved from duty at Kelly Field, Wilbur Wright Field and San Antonio, respectively to sail from New York for Panama Canal Zone after completion of temp. duty with summer training camps, at Miller Field, N. Y.

Capt. Leo A. Walton, A.S., relieved from duty at Office Chief of A.S.; assigned to McCook Field as student A.S. Engineering School.

Resignation of First Lieut. Francis Washington Ruggles, A.S., accepted by the President.

Leave of absence of Capt. Harrison W. Flickinger, A.S., extended one month.

Col. Theodore A. Baldwin, jr., A.S., relieved from duty at Balloon and Airship School; to Second Corps Area Hq. for duty with Air Service.

Leave of absence for one month granted First Lieut. Lawrence I. Peak, A.S., with permission to apply for one month extension.

One month leave of absence granted to First Lieut. Walter H. Reid, A.S.

Capt. Homas P. Lanphier, A.S., promoted to Major.

First Lieut. Frederick Foster Christine, A.S., promoted to Captain.

Capt. Donald Macy Liddell, A.S.O.R.C., ordered with his consent to active duty with Industrial War Plans Division, June 16 to June 30, 1923.

Three months leave of absence granted First Lieut. Benjamin B. Cassiday, A.S.

Two months leave of absence granted First Lieut. Truman W. Allen, A.S.

Two months and two days leave of absence granted Maj. Herbert M. Dargue, A.S.

Resignation of First Lieut. Howard Dutton Norris, A.S., accepted by the President.

"If war were declared tomorrow what would we do for aircraft?"

Proposed Air Service Legislation

In the discussions that have been going on relative to measures for the benefit of the personnel of the Army Air Service, where promotion has slackened practically to the point of demoralization, consideration is being given to a project for a cash gratuity for second lieutenants of that service, flying cadets and reserve officers, while undergoing training, of from $50 to $60 a month payable upon separation of the individual from the Air Service, or upon death or promotion to first lieutenant.

It also is proposed to base promotion on length of service, as in the Medical Department, with the periods arranged, for example, so as to have promotion to first lieutenant in four years, to captain in three years, to major in three years, and to lieutenant colonel in four years. Under this system an officer would become colonel, say, in 20 years, and he would reach the grade of major in 10 years, in that event, there probably would be some provision for credit in the case of those transferred from other arms of one-half of the previous commissioned service.

Still another feature being considered relates to retirement, which has a vital and intimate bearing on the careers of flying officers. Undoubtedly provision for retirement for disability would be retained as reasonable and just to the individual, with additional authority for retirement, also, on three-fourths pay, after a prescribed period of actual flying duty. There is a difference of opinion as to just what that period should be, but the conservative view is that it should not be much more than 15 years. This is not considered as liable to add appreciably to the expense of the retired list, since many officers would be transferred to other arms and become eligible for retirement in due time under conditions prevailing now, while many of them would not serve fifteen years, since the average life of the flying personnel is only twelve and a half years.

All-Metal Airplane Tested

The latest type of airplane to make its appearance at the Engineering Division, A.S., at McCook Field is of all-metal construction, the first of its kind designed by the Air Service. It has already made its maiden flight, and full performance tests are under way. It is designated the CO1.

Both the wings and fuselage are covered with corrugated duralumin, and the structure proper is heat-treated steel and duralumin. The weight of the plane empty is 3,000 lb., fully loaded 4,750 lb. Unlike most metal-covered airplanes, the CO1 is not overweight and can safely carry loads greatly in excess of the specified design load of 1,750 lb. It is powered by the standard Liberty 12 engine and has a gasoline capacity of 125 gal.

There are several unusual features embodied in the design. The primary function of this airplane being ground observation, the wing is placed at the top of the fuselage and its thickness reduced adjacent to the cockpit to give the pilot an unobstructed view of the ground. The wing tapers to its full thickness at a point 4 ft. from the fuselage and is braced thereto by external steel struts. Glass wind shields are provided at the sides of the pilot's cockpit, making the use of goggles unnecessary.

The landing gear is of the so-called axle-less type and has an exceedingly wide tread, the landing gear struts being anchored to the wing structure. The front cockpit is roomy and comfortable and the rear cockpit is so arranged that the observer is partially shielded from the wind while handling the guns.

Airship Movements

The Army Air Service airship TC2 left Akron, Ohio, at 11.10 p. m. May 31, and arrived at Aberdeen, Md., at 6 a. m. June 1.

The airship C14 is being transferred to Langley Field to make room for the TC2. Lieut. Bruce M. Martin was in command on this flight, with a crew composed of Lieutenants Thomas and Schneeberger; and Sergeants Fitch and Neff. The TC2 is a sister ship of the TC1 which is stationed at Scott Field.

Distinguished Service Cross Awards

A summary just published by the War Department shows that altogether 258 Distinguished Service Crosses and 54 Oak-Leaf Clusters were awarded during the war to members of the United States Army and Navy Air Services. Awards of Medals of Honor are not segregated in this summary.

The decorations of the United States awarded for services performed while in the Army of the United States, or while serving in any capacity with the Army, are the Congressional Medal of Honor, the Distinguished-Service Medal, the Distinguished-Service Cross and the Silver Star. The Oak-Leaf Cluster is the "suitable device" awarded, as authorized by law, in lieu of a second, or additional, award of the Congressional Medal of Honor, the Distinguished-Service Medal, or the Distinguished-Service Cross. The Silver Star is the decoration to be worn "for each citation of an officer or enlisted man for gallantry in action, published in orders issued from the headquarters of a force commanded by or which is the appropriate command of, a general officer, not warranting the award of a Medal of Honor or Distinguished-Service Cross."

U. S. NAVAL AVIATION

Mail Flights Between Washington and Hampton Roads

Starting with Monday, May 28, daily mail trips will be made from Washington to Hampton Roads and return by the DT4 which on Wednesday was ferried to Anacostia from Philadelphia by Lieut. F. P. Wead. The DT4 will be used exclusively on the mail route in order to give the Wright T2 engine as much time in the air as possible and in order to determine its merits. It is believed that by this method the qualities of the ergine will be determined and the "bugs" eliminated in the quickest time.

Naval Air Station, San Diego, Calif.

The Air Station Officers' Machine Gun Team met the Army Officers' Team at Rockwell Field Air Depot. Along with the keen competition, several interesting facts were brought out. One was that the Navy was better than the Army by 410 points; another development was the necessity for a great deal more practice in the manipulation of this weapon by both sides.

Preparations are underway for the shooting of rifle and pistol matches with the Army followed by a re-challenge for the clay pigeon shoot, and later by competition in aerial message and bomb dropping.

First Aviation Group, Quantico, Va.

Intensive preparations have been underway during the past two weeks preparing personnel and equipment for the spring bombing exercises. On Monday, May 14, twelve DH's accompanied by a Martin Bomber carrying extra personnel and luggage proceeded to an advanced base at Hampton Roads, Va., from which they are now employed in the conduct of their exercise.

Post Graduate Course at Naval Academy

The following officers have been designated to take a post graduate course in Aeronautical Engineering at the Naval Academy: Lieuts. M. F. Schoeffel, W. K. Paterson, G. D. Townsend, B. R. Holcomb and S. P. Ginder.

Bureau of Aeronautics

Lieut. B. R. Holcombe reported on May 16 as a relief for Lieut. A. W. Radford who has had charge of the personnel section of the Flight Division since the beginning of the Bureau in 1921.

"If war were declared tomorrow what would we do for aircraft?"

Orders to Officers

Lt. Comdr. Henry B. Cecil, U.S.N.—Detached Bureau of Aeronautics; to Naval War College, Newport, R. I., under instruction.

Lieut. David Rittenhouse, U.S.N.—Detached Bureau of Aeronautics; to Naval Air Station, Anacostia, D. C.

Lt. Comdr. Franklin L. Morey (DC) U.S.N.—Detached U.S.S. Aroostook; to Naval Training Station, San Diego, Calif.

Lieut. Robert S. Maxwell (DC) U.S.N.—Detached Naval Training Station, San Francisco, Calif.; to U.S.S. Aroostook.

Lieut. Richard E. Byrd, U.S.N.—Detached Bureau of Aeronautics. to Navy Yard, Boston, Mass.

Lieut. (jg) Lisle J. Maxson (CC) U.S.N.—Detached Mass. Institute of Technology, Cambridge, Mass.; to duty with Gen. Inspector of Naval Aircraft, Eastern District, Garden City, L. I., N. Y.

Lieut. (jg) Calvin M. Bolster (CC) U.S.N.—Detached Mass. Institute of Technology, Cambridge, Mass.; to Naval Air Station, Lakehurst, N. J.

Lieut. (jg) Lloyd Harrison (CC) U.S.N.—Detached Mass. Institute of Technology, Cambridge, Mass.; to Naval Aircraft Factory, Philadelphia, Pa.

Carp. Samuel Butrick, U.S.N.; to Aircraft Squadrons Battle Fleet.

Capt. Alfred W. Johnson, U.S.N.—Detached Bureau of Navigation; to Bureau of Aeronautics, Washington, D. C.

Lieut. Arthur C. Miles, (CC) U.S.N.—Detached Naval Aircraft Factory, Philadelphia, Pa.; to Naval Air Station, San Diego, Calif.

Lieut. Frederick W. Penoyer (CC) U.S.N.—Detached U.S.S. Langley; to Naval Air Station, Pensacola, Fla.

Pay Clk. Arthur L. Sullivan, U.S.N.—Detached Naval Aircraft Factory, Philadelphia, Pa., 5-31-23; to U.S.S. Langley.

APClk. Samuel R. Michael, U.S.N.—Detached Naval Air Station, Anacostia, D. C.; to U.S.S. Mercy.

Lt. (jg) Claude R. Clerk (SC) U.S.N.—Detached U.S.S. Langley; to Naval Air Station, Hampton Roads, Va.

Carp. Lars J. Larson, U.S.N.—Detached Inspector of Naval Aircraft Dayton Wright Co., Dayton, Ohio, 6-15-23; to Inspector of Naval Aircraft, Chance Vought Corp., Long Island, N. Y.

Pay Clk. George W. Dean, U.S.N.—Detached U.S.S. Wright; to Naval Air Station, Anacostia, D. C.

Lt. Comdr. John F. O'Mara (SC) U.S.N.—Detached Dest. Squads, Scouting Fleet 5-19-23; to supply officer Naval Air Station, San Diego, Calif.

Ch. Bosn. James J. O'Brien, U.S.N.—Detached Navy Yard. Washington, D. C.; to U.S.S. Langley.

Ch. Bosn. Fred C. A. Plagemann, U.S.N.—Detached U.S.S. Langley; to Naval Training Station, Great Lakes, Ill.

Capt. Harley H. Christy, U.S.N.—Detached Comdt. Naval Air Station, Pensacola, Fla.; to command U.S.S. California.

Capt. James J. Raby, U.S.N.—Detached command U.S.S. Rochester 6-11-23 to commanding officer Naval Air Station, Pensacola, Fla.

Landing Among Sharks

To put a land plane down at sea would generally be considered plenty of excitement for one day's work in aviation, but to be thrown from the plane almost into the yawning mouth of a shark, and then scramble back out of harms way just in time to hear the expectant snap of his jaws, adds a touch that leaves nothing to be desired in the way of thrills.

This was the experience of one of the spotting teams of the Battle Fleet Air Squadrons recently while engaged in gunnery exercises off the southern coast of California. The plane, a Navy DH, was on station, spotting for the target practice of the battleships when the motor of the plane cut out and made necessary a forced landing at sea. The pilot, Chief Machinist Mate Sheltz, was flying at an altitude of 5000 ft. and was about twenty miles from shore. While the spotter in the plane, Lieut. J. F. Maloney, radioed to one of the other planes that were in the air, to the U.S.S. New York, and to the squadron radio station, the fact that the plane would be forced down in the water, the pilot glided skillfully toward the tug Kingfisher and made a landing in the water alongside.

In order to accomplish a landing of this nature with any degree of safety, it is necessary for the observer in the rear seat of the plane to keep his safety belt buckled to avoid being thrown out, the weight of the observer being necessary to afford a counterbalance and prevent the plane turning turtle. The pilot in the front seat, however, released his belt, and when the plane struck the water he was catapulted from it and hurled into the water about ten feet ahead of the plane. Sheltz suffered no more than the discomfort of a ducking, but a rude shock to his nervous system was given when he discovered a school of sharks in close proximity. The sharks, attracted by the splash made by the plane and pilot, were nosed out by inches in the race back to the plane. Sheltz, handicapped by the weight of his fur lined flying suit, was assisted out of the water a winner, but with the sharks a close second.

The Kingfisher sent over a dingy to take off the pilot and observer, and later hoisted the plane on board undamaged. The skill with which the landplane was brought down saved it from damage and prevented injury to the personnel.

Marine Corps Aviation Notes

Marine Corps Air Forces are having their annual gunnery and bombing exercises. Last week twelve bombers flew down from Quantico to Hampton Roads and for several days carried out according to schedule their bombing tests at sea. While no detailed report has been received by the Department, it is known that a high average of hits was made and the entire schedule was carried out without any mishaps. The expedition left Quantico under command of Capt. J. E. Davis. During the tests he received orders to go to Guam and turned over command of the operations to Capt. S. E. Wood.

Starting with salve bombing with small bombs at a target at a height of 1000 ft., the bombers next tried out their aim at the targets with dummy bombs at an altitude of 3800 ft. flying in division formation. The tests were concluded with division formation long range bombing with live 263 lb. bombs at a stationary float 600 ft. long and 120 ft. wide representing a warship.

The bombing squadron returned to Quantico late Friday and next week will continue the exercises there. One of the most interesting of these will be the combat exercises between pursuit planes, using machine gun cameras instead of the guns, which will give photographic records of the accuracy of the gunners.

COMING AERONAUTICAL EVENTS

DOMESTIC

July 4 — National Balloon Race, Indianapolis, Ind.
Oct. 1-3 — National Airplane Races, St. Louis, Mo.
Late Fall — Curtiss Marine Flying Trophy Race

FOREIGN

June 25-30 — International Aero Congress, London
July 20-Aug. 12 — International Aero Exhibition, Gothenburg, Sweden
Aug. 3-31 — Sailplane Meet, Rhoen, Germany
Aug. 5-26 — Sailplane Meet, Vauville, near Cherbourg, France
Sept. 23 — Gordon Bennett Balloon Race, Brussels, Belgium
Sept. 28 — Schneider Maritime Aviation Trophy Race, Cowes, Isle of Wight, England
Dec. 1 — Entries close for French Engine competition

"If war were declared tomorrow what would we do for aircraft?"

Miscellaneous Notes

Comdr. Newton White has arrived in Washington from London where he has been on duty as Naval Attaché. He will report to the Office of Naval Intelligence for temporary duty upon the expiration of his present leave of absence.

Lieut. R. E. Byrd has been detached from the Bureau of Aeronautics and ordered to report to the Commandant, First Naval District for duty in connection with the organization of the Naval Aviation Reserve Force in that District.

Lieut. S. H. Quarles, U.S.N., who has been attached to the Bureau of Aeronautics since its organization nearly two years ago, has tendered his resignation from the Navy to be effective June 15. Lieutenant Quarles has accepted a position as superintendent of a manufacturing plant at Yorktown Heights under Dr. Miller R. Hutchinson, who for many years was assistant to Thomas Edison.

The teams for the four Navy balloon crews which will be entered in the National Elimination Balloon Race at Indianapolis on July 4 have been selected and instructed to engage in practice flights with free balloons in preparation for the race. The teams are as follows:

Team No. 1—Lt. Comdr. J. P. Norfleet and Lt. J. B. Anderson.

Team No. 2—Lt. L. J. Roth and Lt. T. B. Null.

Team No. 3—Lt. J. B. Lawrence and Lt. F. W. Reichelderfer.

Team No. 4—Lt. F. P. Culbert and Ens. E. B. Bark.

Marine Corps

A new Marine Corps ambulance plane for field use is being inspected by Lieut. Col. T. C. Turner, U.S.M.C., at the plant of the Huff-Daland Co., Ogdensburg, N. Y. The ambulance plane has proved an invaluable piece of flying equipment to the Marine Corps in their tropical outposts. By means of it Marine aviation units have been able to render prompt and effective medical service to outlying posts in Haiti, San Domingo and other tropical stations where otherwise it would have taken days of travel for doctors and medicine to reach them.

The MO plane which was recently returned to the Glenn Martin Co. for repairs is ready to be ferried back to Anacostia.

Bombing exercises are being held by the pilots of the First Aviation Group, Marine Corps, Quantico. The practice is beng held from the Naval Air Station, Hampton Roads, and is under the direction of Capt. L. E. Woods, U.S.M.C. Major Geiger, Commanding Officer of the Marine Flying Field at Quantico, and Lieut. W. B. Jupp, U.S.N., of the Office of Director of Target Practice, Navy Department, have gone to Hampton Roads by air to observe the practice.

Capt. J. E. Davis, U.S.M.C., has been ordered to Guam to relieve Capt. R. J. Mitchell, U.S.M.C., in command of the First Scouting Squadron.

Lieut. G. R. Pond, U.S.N., is giving the XS submarine scouting plane trial flights on Long Island Sound. The XS was built by the Cox-Klemin Co.

The Aerological Section is compiling meteorological data from all reliable sources available for use in planning a polar flight of the ZR1. Exhaustive statistics of meteorological stations in Spitzbergen, northern Canada and Alaska are included in data being obtained. Other sources are the reports of Admiral Perry's expedition to the pole, the book of V. Stefansson called "The Friendly Arctic" and reports of other explorers.

Loving Cup for Lieutenant Irvine

A loving cup has been presented to Lieut. Rutledge Irvine by the Dayton Chamber of Commerce in recognition of his accomplishment in breaking the world's weight carrying altitude record for single motored airplanes. The cup was presented at a dinner tendered to Army and Navy pilots who have recently been record winners in aviation. The cup is double handled seven inches in diameter and twelve and a half inches high and is engraved with the following inscription:

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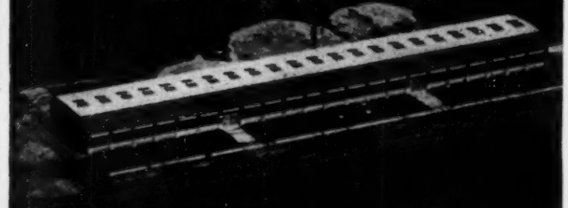

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Aeronautical Jl., (English), 1915, 3 issues; 1916, 5 issues.

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